Volume XI.
Number 3.

SEPTEMBER 1896.

$2.00 Per Year.
20 Cents per Copy

TEXTILE WORLD

SEP 28 1896

	PAGE
John Dobson, (portrait)	15
Opening Philadelphia Textile School	17
The Patriotic Voters' Duty	19
The Presidential Campaign	20
Style Suggestions	24
Personal Record	28-30
Questions and Answers	31-32
Cotton Department	33
Woolen Department	43
Knitting Department	51
Power Department	60
Colors and Dyeing	65
Mill News	129-139
Yarn Department	115
Textile Patents	11-12
The Cotton Market	121
The Wool Market	123
Mills and Machinery For Sale	129-139
Situations Wanted	141

Buyers' Index, - - - Page 73.
Alphabetical Index, - - " 79.

GUILD & LORD, Publishers, 620 Atlantic Avenue, Boston, Mass.

GRANGER FOUNDRY & MACHINE CO.,

PROVIDENCE, R. I.

Bleaching, Dyeing, Drying and Finishing Machinery.

Cotton, Paper and Husk Rolls.

TENTERING MACHINES

With Patent Self-Feeding Clips.

Patent Combination Rolls

OF

HUSK AND COTTON.

Calenders, Mangles, Drying Machines, Tentering Machines, Hydraulic Presses, Etc.

BEETLES

Short and Long Chain Dyeing, Sizing and Drying Machines.

PATENT

OIL, COMBINED "PLATE and FLAME"

SINGEING MACHINES.

Established 1820. Incorporated 1889.

Bleaching, Dyeing, Drying

AND

Finishing Machinery

FOR

···· TEXTILE FABRICS ····

H. W. Butterworth & Sons

COMPANY,

PHILADELPHIA, - - PA.

TENTERING MACHINES

Of Various Patterns.

CLAMP OR PIN CHAIN

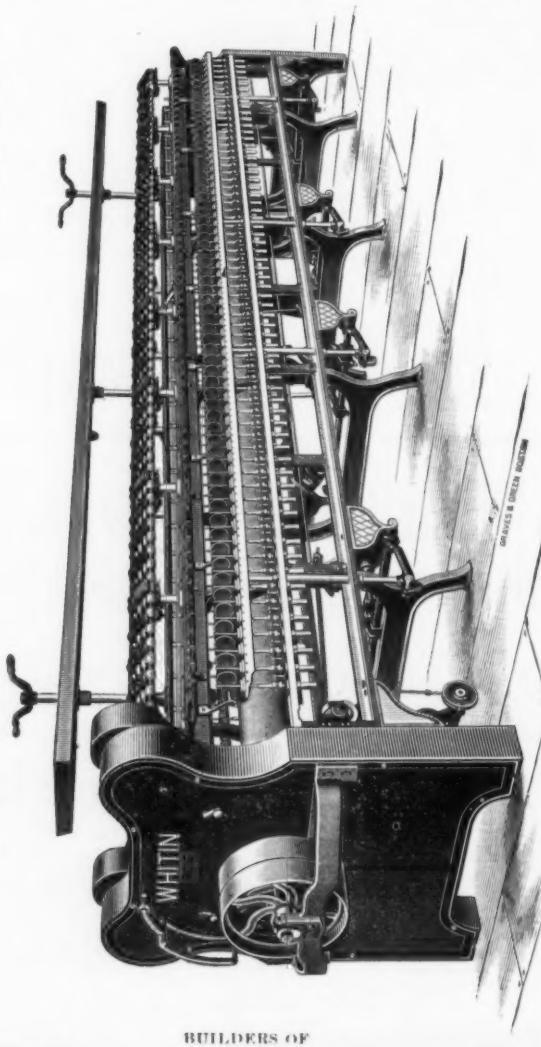
FOR

Worsteds,
Woolens,
Lawns,
Ginghams,
Plaids,
Etc., Etc.

The Whitin Machine Works,

Revolving Flat Carding Engines,
Long Chain Quilling Machines,
Wet and Dry Twisters,
Looms,

Railway Heads,
Drawing Frames,
Reels,
Spoolers.



The New Whitin Ring Spinning Frame.

BUILDERS OF

COTTON MACHINERY,

Whitinsville, Mass.

Southern Office: 38 So. Tryon St., Charlotte, N. C.

S. W. CRAMER, Southern Agent.

OUR LOOMS IN THE SOUTH

320 looms running at Tucapau Mills, S. C.
148 more ordered by same mill.
1000 looms being started by Pelzer Mfg. Co., S. C.
600 looms running at Lockhart Co., S. C.
200 more looms ordered by same mill.
1040 looms being started by Gaffney Co., S. C.
60 looms running at Wilmington Mill, N.C.
48 looms ordered by Meridian Mill, Miss.
1280 looms ordered by Spartan Mfg. Co., S. C.
100 looms being started by Henrietta Mills, N. C.
300 looms ordered by Steeles Mills, N. C.
250 looms ordered by Victor Mfg. Co., S. C.

5346 in all.

Several thousand Looms also built by other shops to take our attachments.

THE NORTHROP LOOM

Is no longer an experiment. The above orders prove it.

The managers of the above mills are too experienced to risk a failure.

They appreciate a real improvement, however.

A mill that orders common looms at the present time deliberately handicaps its future prospects.

The whole cotton manufacturing world has found profit in the use of our Spindles, Temples, Rings and Separators.

We trust our advice in the past has been worthy of confidence.

We now recommend this loom and stake our reputation on its success.

What mill can afford to disregard the above facts?

GEO. DRAPER & SONS,

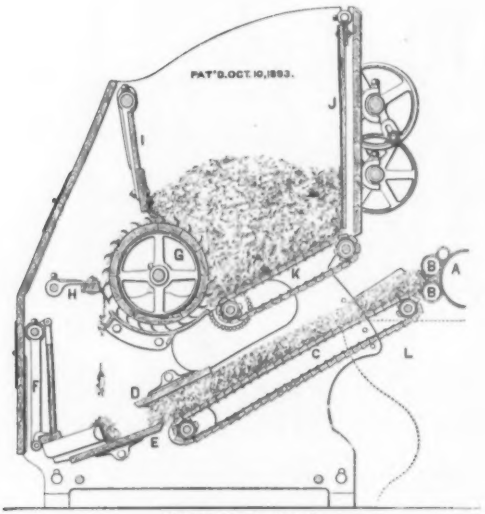
HOPEDALE, MASS.

THE FISHER CARD FEED

for WOOL, SHODDY, and COTTON, is

· · · Second to None · · ·

on the market. It holds more stock, requires less space, and needs no "attachments."



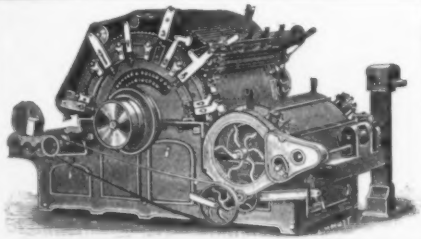
SECTIONAL VIEW.

THE FISHER CARD FEED is simple in construction, is strongly built, turns out even work, requires little changing, and feeds the same whether full or nearly empty.
It is built in all sizes and guaranteed as represented.

MANUFACTURED BY

Woonsocket Machine & Press Co.,

WOONSOCKET, R. I.



J. C. POTTER, Pres. HOWARD & BULLOUGH C. E RILEY, Treas.

American Machine Company,

(LIMITED),

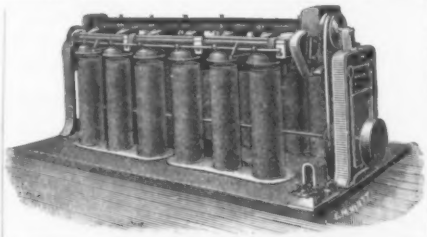
PAWTUCKET, - R. I.

Revolving Flat Cards.

The Simplest and Most Accurate. Greatest Production. Best Quality. Least Waste.

Electric Stop-Motion Drawing.

The quality of the sliver produced cannot be surpassed. Waste, "single" and roller laps are prevented, production increased, and great saving effected.



Bale Breakers, Feeders, Combined Self-Feeding Openers, Breaker and Finisher Lappers,

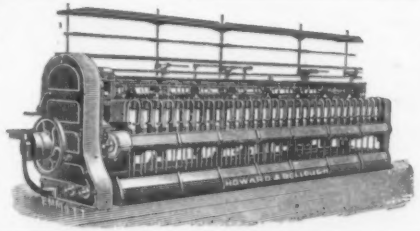
All made from entirely new patterns and containing many valuable patented improvements.

Slubbing, Intermediate, and Roving Machines.

New patented Differential motion, New Arrangement of Cone Drums, New System of Balancing top or bobbin rail, etc.

All parts of above machines are made by special tools and are exact duplicates.

Correspondence Solicited. Send for Descriptive Catalogue.



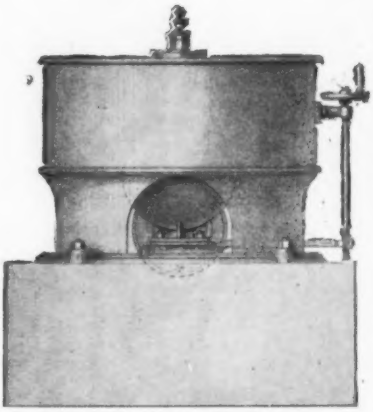
A. F. CRAIG & CO., Ltd.,

Established 1836.

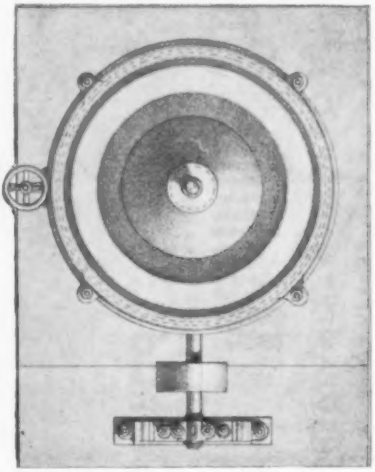
CALEDONIA MACHINE WORKS and SNAWDOUN STEEL WORKS,

Paisley, Scotland,

Also at London, England; Paris, France; Berlin, Germany; New York City.



Extractor.—Side Elevation.



Extractor.—Top View, Showing Cover.

— MAKERS OF —

HYDRO EXTRACTORS,

Thread and Twine Polishing Machines,
Calenders, Cloth Finishing Machinery,
Bleaching and Dyeing Machinery, Fulling Mills,
Washing and Drying Machinery,
Hydraulic and Screw Presses,
Cotton Presses, Packing Presses, Etc.

For Catalogues, Testimonials, and Prices, apply to our representative

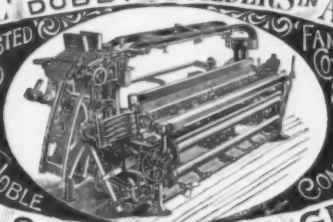
L. W. BETHUNE,

128 Pearl Street, New York City.

CROMPTON LOOM WORKS

ORIGINAL FANCY LOOM DOBBY BUILDERS IN AMERICA

FANCY WOOLEN & WORSTED CLOSE SHED LOOMS.

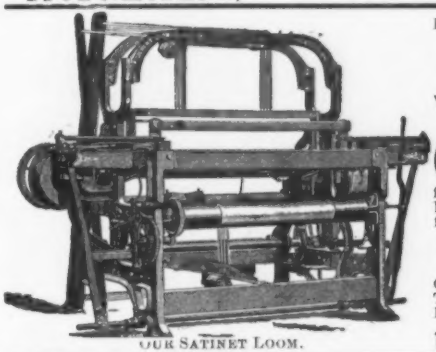


FANCY COTTON, GINGHAM SILK & CARPET LOOMS.

NOBLE COMBS.

POWER LOOMS OF ALL GRADES.

WORCESTER, MASS. U.S.A.



OUR SATINET LOOM.

Established 1866. Incorporated 1894.

GILBERT LOOM CO.,

Worcester, - Mass.

Manufacturers of Improved

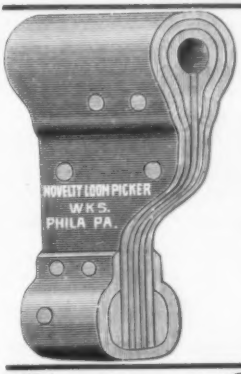
Open Shed Full Fancy Looms

for weaving Worsteds, Woolens and Dress goods. Positive Open Shed Dobby for light or heavy weaving.

Satinets, Jeans, Flannels,

Cane, Wire, Duck and Gunny Looms, Tapestry, Brussels Looms, Printing Drums and Sitting Frames.

180 to 186 Union and 33 North Foster Street.



CHAS. W. GESSLER, Prop.

NOVELTY LOOM PICKER WORKS,

MANUFACTURERS OF

Loom Pickers

OF EVERY DESCRIPTION.

Our New Works and Office - - -

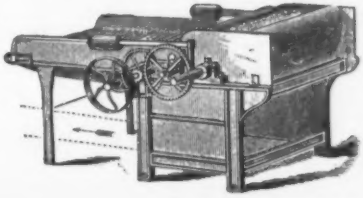
3-5-7 South 48th Street, Philadelphia.

Our Name on Every Picker.

GEO. GERRY & SON,

ATHOL, MASS.

Manufacturers of



LUMPERS

WOOL and WASTE DUSTERS,

RAG DUSTERS, NAPPERS,

Improved

CLOTH MEASURING MACHINES.

Lumper and Duster Cylinders Refilled and Repaired.

COTTON OPENERS AND LAPPERS

Atherton Machine Co. LOWELL MASS.

Knowles Loom Works

MANUFACTURE JACQUARDS, DOBBIES,

Looms of every description

FANCY WEAVING WORCESTER, MASS.

5 Awards at Worlds Fair.

PARKHURST BURR PICKERS

FOR CLEANING EFFECTUALLY WOOL OR COTTON.

Improved MIXING PICKERS And Picker Feeds.

Steel Ring Burring Machine Cylinders and Feed Rolls a Specialty.

The Sutton Improved Side Drawing Machine. Write for Circulars.

ATLAS MANUFACTURING CO., - - NEWARK, N. J.

Textile Machinery.

Openers and Pickers. Revolving Top Flat Cards.

Drawing, Slubbing, Intermediate, and Roving Frames.

Spool Thread Machinery. Self-Acting Mules.

H. G. McKERROW & CO.

Sole Agents in U. S. and Canada for

Tweedales & Smalley, England. Richard Threlfall, England.

Wm. Ayrton & Co., England.

"VERVIERS" Paper Tubes for COTTON, WOOLEN, WORSTED, AND SILK SPINNING.

Worthington Building, 31 State St., Boston, Mass.

THOS. J. HILL, Pres. and Treas. M. C. PIERCE, Supt. and Sec'y

Providence Machine Co.,

MANUFACTURERS OF

Improved Cotton and Worsted Roving Machines,

Cotton Combers and Lap Winders, Worsted Spinning Frames and Twisters, Fluted Rolls, Flyers, Spindles, Gears, Bolsters, Caps, Tubes, Etc., Etc.

564 EDDY ST., PROVIDENCE, R. I.

CARDS, DRAWING

SPINNING FRAMES

MASON MACHINE WORKS COTTON MACHINERY, TAUNTON, MASS.

MULES

LOOMS

J. B. PARKER MACHINE CO.

—MANUFACTURERS OF—

The Bancroft Mule, The Clinton Yarn Twister,
The Murdock Drop Wire Stop Motion for Warpers.

CLINTON. - - MASS.

FACTORIES:
LEICESTER, MASS.
WORCESTER, MASS.
PHILADELPHIA, PA.
PROVIDENCE, R.I.
NO. ANDOVER, MASS.
WALPOLE, MASS.
LAWRENCE, MASS.
LOWELL, MASS.
MANCHESTER, N.H.

AMERICAN Card Clothing Co

MANUFACTURERS OF CARD CLOTHING OF EVERY DESCRIPTION. SURFACE GROUND OR NEEDLE POINT.

Estimates Given & Orders Filled Promptly at each Factory

OFFICE: KNOWLES BLDG. WORCESTER, MASS.

CURTIS & MARBLE MACHINE CO.,

MANUFACTURERS OF

Wool Burring, Picking and Mixing Machinery.

Cloth Finishing Machinery

FOR COTTON, WOOLEN, WORSTED, PLUSH GOODS, ETC.

SHEARING MACHINES A SPECIALTY.

Send for New Descriptive Catalogue.
Office and Works at Webster Square, WORCESTER, MASS.

International Safety Solvent Co.

Incorporated 1895. Capital, $500,000.

DEGREASING of WOOL

BY THE

New Safety Solvent Process.

SOAP AND ALKALI DISPENSED WITH.

Stronger, Cleaner, Softer Wool, and an Increased Yield of Clean Fibre Guaranteed.

Estimates, Specifications, Plans and Drawings furnished on application.

Plants Contracted for, Erected and Started.

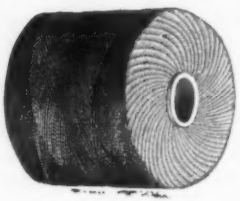
Patented in the United States, Canada, Great Britain, France, Germany, Belgium, Austria Hungary, Russia, Argentine Republic, Uruguay, Cape Colony, New South Wales, New Zealand, Queensland, South Australia, Tasmania, Victoria, and Western Australia.

EMILE MAERTENS, President and Treasurer,

P. O. Box 1002. - 49 Westminster St., PROVIDENCE, R.I.

UNIVERSAL WINDING COMPANY.

YARN MANUFACTURERS will advance their interests



By investigating OUR PROCESS OF WINDING.

HIGHEST AWARD at the World's Fair, Chicago, for new system of winding and also on special machines.

ONLY GOLD MEDAL awarded on textile machinery at the Mechanics' Fair Boston, 1895.

F. H. BISHOP, - Manager,

226 Devonshire Street, Boston, Mass.

PATENTS

CROSBY & GREGORY,
34 SCHOOL STREET.

Telephone 3593, Boston. **Office Established 1854.** Cable address Aniline.

George W. Gregory, in November, 1874, resigned his position as Principal Examiner U. S. Patent Office to enter the firm.

Patents secured in the United States and all other countries. Reissues obtained. Interferences conducted. Suits brought and defended for infringement, and searches made as to the validity of patents. Prepared to give special and expert attention to cases involving knowledge of cotton, wool, leather and metal working machinery, including boots and shoes and electrical, chemical and metallurgical inventions and steam engineering Correspondence solicited. No charge for preliminary advice. Personal consultation best when possible.

HOPEDALE, Mass., January 2d, 1896.

Mr. George W. Gregory, of Crosby and Gregory, has taken out for us since January, 1875, more than two hundred patents. GEO. DRAPER & SONS.

List of Textile Patents Issued August, 1896.

Specifications and drawings furnished for fifteen cents each. Address W. S. Gavey, P. O. Box 222, Brooklyn, N. Y.

Apparatus for Grinding Spindle Ends. 566,122. F. Ashton, Oldham, England.

Carding Engine Screen. 566,362. J. H. Whittle, Worcester, Mass.

Cloth Pressing Machine. 565,079 and 565,071. D. Gessner, Worcester, Mass.

Cloth Spreading Apparatus. 564,989. J. Goldenberg, Philadelphia, Pa.

Dyeing Apparatus. 566,258. L. Weldon, Amsterdam, N. Y.

Electrically Operated Jacquard mechanism for looms. 565,447. E. Gates, Philadelphia, Pa.

Electrically Operated Reed for looms. 565,448. Same as below.

Electrically Operated Shedding Mechanism. 565,446. E. Gates, Philadelphia, Pa.

Electrolytic Separation of Vegetable fibres. 565,706. B. S. Summers and C. O. Boring, Chicago, Ill.

Flax Puller. 566,403. A. C. Lamar, St. Paul, Minn.

Knitting Machine Cam Mechanism. 566,019. J. W. Rist, Chicopee Falls, Mass.

Knitting Machine Stop Motion. 565,134. W. Cobb and A. P. Rickmeyer, Perry, N. Y.

Lappet Loom. 566,551. L. Veyron, Paris, France.

Latch for Retaining Cylinders on spindles. 566,399. I. Johnson and A. Fyreberg, Worcester, Mass.

Loom Batten. 566,222. J. Poyser, Mansfield, England.

Loom Clutch Operating Mechanism. 565,656. H. Wyman, Worcester, Mass., assignor to Crompton Loom Works.

Loom Shuttle Tension Device. 566,689. W. F. Kintzing, Glen Rock, Pa.

Machine for Washing Fibrous Material. 565,581. W. Watson, Bradford, England.

Machinery for Decorticating Ramie. 564,982. P. P. Faure, Limoges, France.

Magnetic Shuttle Motion for Looms. 565,449. E. Gates, Philadelphia, Pa.

Means for Applying Wire Clothing to flats. 565,554. C. Mills, Newton, Mass., assignor to Pettee Machine Works.

Needle Switch Mechanism for Circular knitting machine. 566,294 and 566,295. J. Burleigh, Lakeport, N. H., assignor to Providence Knitting Co., Providence R. I.

Spinning Machine Nipper and Tension device. 566,007. J. Neale, Brooklyn, N. Y.

Spinning Spindle Band Guide. 565,680. J. Gregson and C. J. Murray, Fall River, Mass., assignor one-half Geo. Draper & Sons, Hopedale, Mass.

Spinning and Twisting Frame. 566,204. H. D. Martin and J. P. Tolman, Newton, Mass., assignors to Sampson Cordage Works, Boston, Mass.

Spinning and Twisting Frame Separator. 566,205. Same as above.

Sponge Fabric and Making Same. 565,590. D. E. Ballam, Brooklyn, N. Y.

Woven Fabric. 565,829. J. Bister, Brooklyn, N. Y.

SACO WATER POWER MACHINE SHOP,

Cotton Machinery,

BIDDEFORD, - MAINE.

PLATT BROS. & CO.'S

REVOLVING FLAT CARDING ENGINES,

"1894" pattern with Patent Flexible Bend with slots for direct setting of the flats to the cylinder by the gauge, and McConnell & Higginson's Patent Grinding Apparatus for grinding the flats from their working surfaces.

Sykes' Hardened and Tempered Plow Ground Polished Steel Wire Card Clothing.

EVAN ARTHUR LEIGH, Successor to E. A. Leigh & Co., (Sole Agent),
35 and 36 MASON BUILDING, BOSTON.

ESTABLISHED 1865.

W. W. ALTEMUS & SON,

Patent Bobbin and Cop Winders, Spoolers, Beamers, Warp Mills,

Chenille Cutting, Carpet Rolling Machines, Reels, Etc.

2816 N. 4th Street, - PHILADELPHIA, PA.

YOU CAN SAVE

ONE MAN'S PROFIT BY ORDERING YOUR

STEAM SUPPLIES

DIRECT FROM THE MANUFACTURER

Our Line of

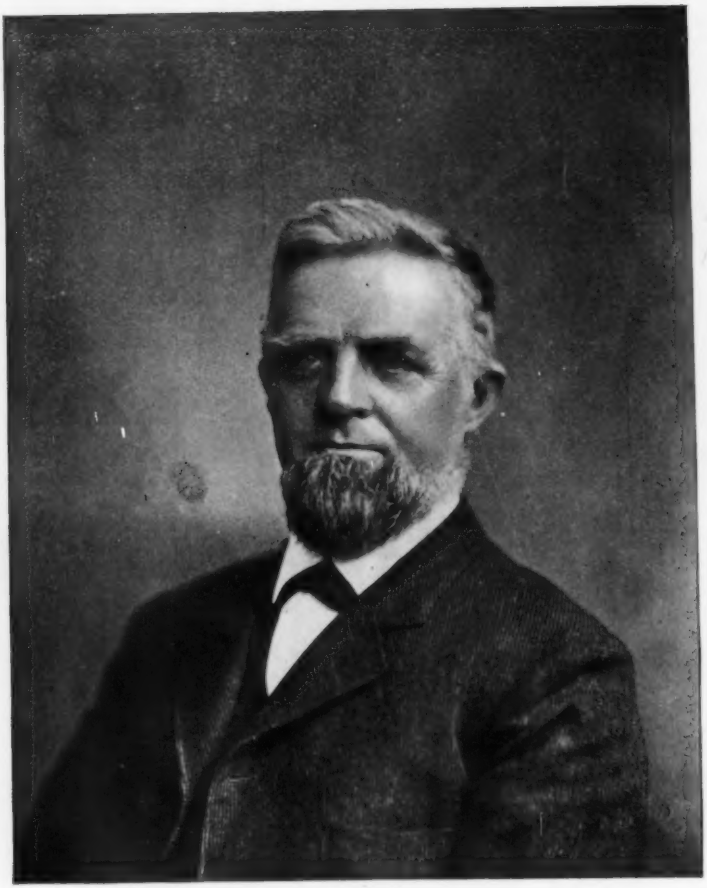
Valves, Cocks, Engineers' Tools

and Supplies are strictly High Grade, and invariably give satisfaction. You can order from our Illustrated Catalogue at a material saving in time, money and attention; also with the certainty of getting the very best goods in the market. If you do your own steam-fitting about the mill, we can be of good service to you.

STANDARD WROUGHT IRON PIPE

JOHN SIMMONS CO.

106-110 Centre St., NEW YORK.



JOHN DOBSON.

TEXTILE WORLD.

Vol. XI. SEPTEMBER, 1896. No. 3

JOHN DOBSON.

In John Dobson, the senior member of the firm of John & James Dobson, of Philadelphia, may be found, in an eminent degree, those qualities which have made the commerce of America the envy and wonder of the older nations.

The early history of the firm named is a tale of pluck and practical knowledge. Born in England in 1827, John Dobson realized, as a young man, the great future which this country assured to men of his fibre; hence more than forty years ago he became a citizen of Philadelphia, and early in the fifties laid the foundations of the now famous firm of John & James Dobson.

From his modest early steps in the manufacture of woolen goods, the same prudence, indomitable perseverance, practical skill and good judgment have marked the history of this magnificent commercial monument, of which Philadelphia, as well as the national textile industry, may well be proud.

The qualities we have indicated could not fail of success, hence the young establishment continued to expand, increasing its output and enlarging its productive capacity, till, in 1866, James Dobson joined the company, and the well known firm name of John & James Dobson was inaugurated. This establishment is, to-day, the largest individual concern in the United States producing the lines manufactured by the Dobsons.

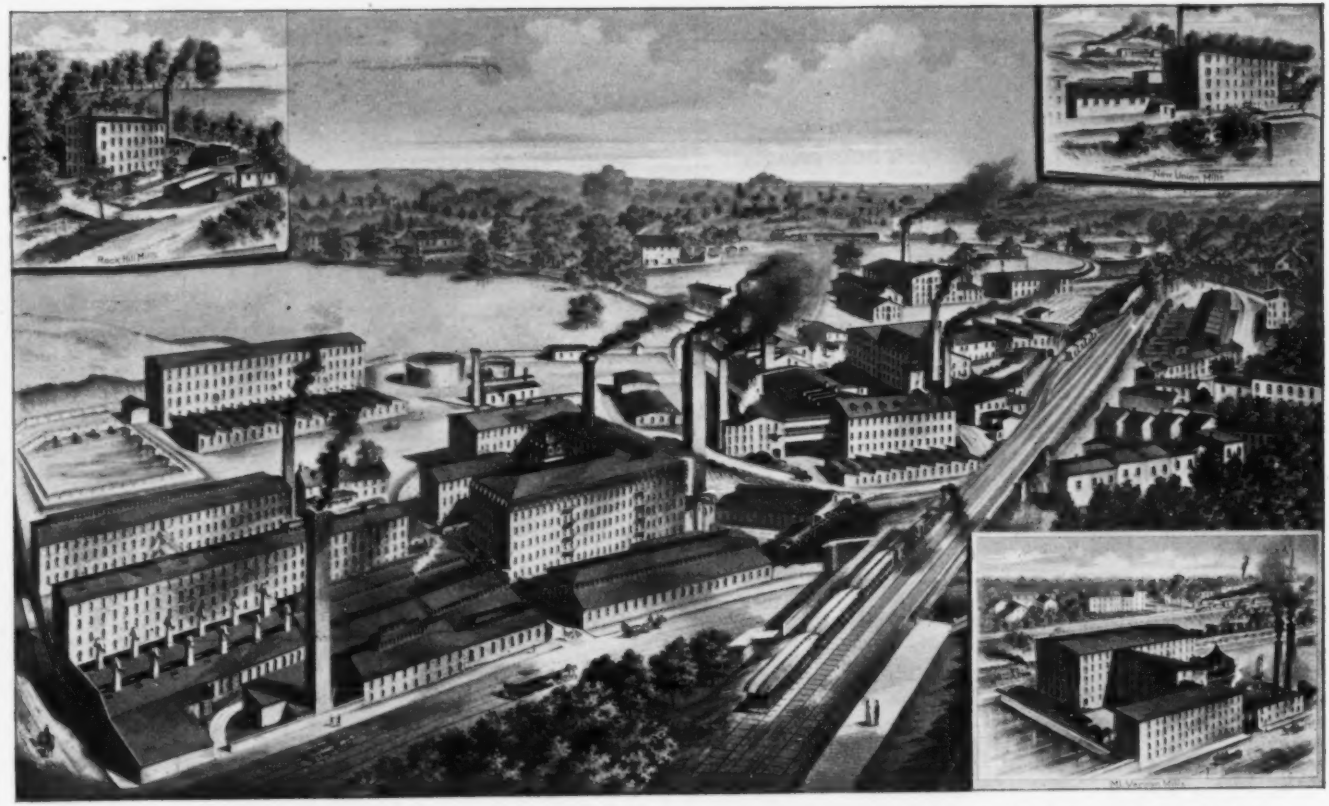
The works comprise a vast system of mills at the pretty Falls of Schuylkill, which constitute the main group, and present an imposing front to the visitor. These are shown in an illustration on another page, together with three separate mill structures situated farther up the valley.

In years of normal activity, the Dobson mills employ between four and five thousand hands, the output comprising fine silks, velvets, plushes, dress goods, cloths, blankets, carpets and yarns. It is, however (and this is no disparagement to their other products), for their carpets that the Dobsons are most celebrated. The customers are found wherever train or pack mule penetrates throughout the United States, while they have their own retail outlets in Philadelphia, on Chestnut St., and in New York, on 14th St.

The products of this firm are a synonym for integrity of quality, perfect weaving and fine finish.

Few men have done more to bring to its present high rank the textile trade of America. Alert to the spirit and wants of so mixed a body of customers as our people affords, discriminating in his judgment, yet firm and enterprising, John Dobson takes his rightful rank as one of the princes of the textile industry. Unlike many of their compeers, however, the Dobsons have varied the products of their mills with the result of greater economy in production and distribution, a broader basis of prosperity and steadier employment of help.

That such a man as John Dobson should accumulate wealth, need surprise no one, and the vast amount circulated



CARPET, BLANKET, CLOTH, WORSTED AND PLUSH MILLS OF JOHN AND JAMES DOBSON, AT THE FALLS OF THE SCHUYLKILL.

in payment of wages and for raw material, far transcends the benefits he has personally secured as the result of what may not improperly be called his genius for business. Not only has this firm been subject to the general commercial reverses, but in 1891 the extensive carpet mills were destroyed by fire, causing a loss of about a million dollars, and the rapidity with which they were replaced and the business restored to its normal condition, accentuates what has been said of the enteprise of the firm.

John Dobson is no politician, but his political creed is that of a clean-cut Republican and sound money man. He holds to the doctrine that protection to industry is the only safe bulwark of national greatness and prosperity—that the prosperity of the nation is the prosperity of its industries.

As a citizen, he has ever been loyal to the government, stalwart and fearless in its support, and true to the interests of his city. During the civil war he bore his share of service, having twice received a captain's commission in the Pennsylvania Reserves, and led his company in action. Personally, Mr. Dobson is not allured by social distinctions or civic honors. Such have never been sufficiently fascinating to divert him from his purpose to extend and improve the vast business in which he is interested. Living a quiet, domestic life at his home, in the neighborhood of his mills, he is yet a familiar figure in Fairmount Park, is a fine whip, and takes pride in his equine favorites.

At the wool warehouse of the firm on Front Street, he may be seen daily, taking, as he does particularly, the care of the purchase of raw materials and the work at the mills, while the sales department and the retail establishments are especially the care of James Dobson.

To sum up, John Dobson's life record is one of business activity, sagacity and enterprise; of a concentration of all the energy of an unusually strong and prudent character on every detail of his business; and this without any adventitious aids, and free from all display or ostentation; a simple, strong, capable man.

Opening Day at the Philadelphia Textile School.

The Philadelphia Textile School, will, on Monday, September 28th, throw open its doors for the term of 1896-1897, and it can be safely said that at no previous season has the record of progress been so clearly stamped on all the varied departments which go to make up this admirable institution. New rooms have been overhauled and occupied, appliances have been improved on and new ones added, and the methods of instruction revised wherever previous years have shown that it would be beneficial to do so.

The School, in past years, as is well known, has confined its attention more especially to the processes involved in the manipulation of wool as required for the woolen and worsted fabrics. This has not been a matter of choice, but rather born of necessity, owing to limitations of space, and when the acquisition of the present commodious quarters gave abundance of room for growth, plans were at once formulated for the addition of machinery such as is especially required for cotton and silk. These efforts have been earnestly carried forward in the face of what at times seemed almost unsurmountable difficulties, until success was finally attained and as a consequence, a complete cotton and silk plant will be in operation shortly after the opening of the present school year put in as follows: The carding, railway head and drawing frames have been installed by the Pettee Machine Works, of Newton Upper Falls, Mass.; roving machinery, comprising slubber, intermediate and fly frames, by the Woonsocket Machine & Press Co., of Woonsocket, R. I.;

roving cans for the above machinery by the Sullivan Machinery Co., of Claremont, N. H. The spinning frames for warp and filling, by the Flaes & Jenks Machine Co., of Pawtucket, R. I., and the Whitin Machine Co., of Whitinsville, Mass. Spooling frames by Easton and Burnham of Pawtucket, R. I.; warping and beaming machines, by T. C. Entwistle, of Lowell, Mass.

The weaving department has been strengthened by the acquisition of a Northrop magazine loom from the Geo. Draper & Sons of Hopedale, Mass., and five new looms intended especially for the weaving of cottons.

The following additions have been made to the appliances for manipulating silk: A boiling off kettle, furnished with reels, contributed by the Women's Silk Culture Association of America; silk warping mill and creel, from the Atwood Machine Co., of Stonington, Conn.; a soft silk skein winder and 700 warp spool, from the same company; a six space narrow fabric loom, furnished with appliances for weaving the highest classes of silk fabrics, from Schaum & Uhlinger, of Philadelphia; a twenty harness four by four box silk loom with box chain multiplier, from the Crompton Loom Works, of Worcester, Mass.

To run this increased machinery the power plant has been increased by the addition of twenty horse power steam engine from the John B. Stetson Co., of Philadelphia. It is apparent, therefore, that even to the minutest details of manufacture, the most ample provision for practical work has been made, which supplements in the most thorough manner, the analytical and theoretical work of the class rooms.

Professor L. W. Miller, of the School of Industrial Art in Philadelphia, who has been investigating industrial education in Europe during the past summer, finds that in none of the foreign schools is the course of instruction so comprehensive and thorough as in the Philadelphia School, and goes on to say that Americans who cherish the idea that they must send their sons to Europe to be educated, in order to give them the highest advantages of this kind, certainly make a mistake, as far as textile education is concerned. Professor Miller does not under-estimate the advantages of travel for a young man, and recognizes fully the advantages which familiarity of institutions of other countries only can give; but as far as direct usefulness of working in the foreign schools is concerned, he feels that the American student is much better off in the American schools.

It is interesting and encouraging to know that this opinion is uniformly held by the teachers in the European schools; they say frankly that they cannot see why American boys go to foreign schools to study when they have so much better schools at home. In all that relates to technological education they frankly say that there is nothing in Europe to compare with what is done in the best American schools.

The Philadelphia school is well worth a visit, if only for the sake of seeing the large collection of textile machinery, so much more varied and comprehensive than is ever united in any one manufacturing establishment, which the enterprise of the managers of this school, and especially the untiring energy of Director E. W. France, has brought together. The advantages offered by the school seem to be very fully appreciated, and the attendance bids fair to be very large this year, notwithstanding the hard times, so that parents who contemplate sending their sons will do well to make application without loss of time.

—The business men of New York, are preparing for a great parade in behalf of sound money, Oct. 31.

Textile World

An Illustrated Monthly Magazine representing the Textile Industries of the United States.

GUILD & LORD, { HENRY G. LORD. BERTRAM LORD.
Proprietors and Publishers.

PUBLICATION AND HEAD OFFICES:

BOSTON: - 620 ATLANTIC AVE.

BRANCH OFFICES:

PHILADELPHIA. 447, The Bourse.
EDWARD S. KENDRICK, Resident Manager.

NEW YORK. 14-16 Vesey Street.

Subscription Price.

$2 00 per year for U. S. and Canada.
2 50 per year for Foreign Countries.
3.00 per year with Dyed Sample Sheets.
(Postage is prepaid by publisher.)

Entered at the Boston, Mass., Post Office as second-class matter.

Directory Issues.

The TEXTILE WORLD publishes four special issues during the year, which include directories of all the textile establishments in the United States, giving the name of mill, location, railroad connections, distances, officers, agent, superintendent, capacity of the mill, kind of goods made, whether there is water or steam power, whether there is a dye house or not, selling agent, and in many instances, the name of the man who does the buying. These directory issues are illustrated by specially prepared maps of the different states, showing the location of each city and town where there is a textile establishment, and only such towns are given.

This directory is the most complete and accurate published, regardless of price. Our perfect system of gathering statistics in connection with the TEXTILE WORLD, and the plan of rewards offered for corrections, as well as the system of revising the information quarterly, makes these directory issues unsurpassed.

We also publish a special issue containing directory of the manufacturing clothiers, cloak and suit makers, jobbers and large retailers buying from manufacturers. The directory issues are as follows:

Manufacturing Clothiers,	January	Number
Suit and Cloak Makers,	"	"
Jobbers and Large Buyers,	"	"
Middle States Mill Direct'ry,	April	"
South'rn and West'rn States,	July	"
New England States,	October	"

Subscription price of $2 per year includes all these special numbers without extra charge. Price of single copies of directory issues, 50 cents.

The Patriotic Voter's Transparent Duty.

Nothing but over-confidence and fraud can prevent the triumph of sound money at the election scarcely six weeks away. The only really serious danger lies in the fact that many protectionists and gold supporters are beginning to fancy Mr. Bryan is already beaten.

The tide really turned with the boy orator's speech in New York, and since, the horizon has been steadily clearing. The gold imports, the Vermont election, the rebuff to Tillman in South Carolina, the excellent crop prospects, and half a dozen other factors that might be named, have combined to relieve business of the fearful pressure under which it staggered through the torridity of August.

With anything like the verdict expected from Maine, by the time this issue of the TEXTILE WORLD is in readers' hands, another mighty blow will have been struck for the integrity of the dollar and the advancement of the principles of protection.

Dissension among the silver Democrats is increasing so rapidly as to endanger party organization in many States, while fusion differences promise to turn Texas into the Republican column.

The free silver movement is the child of American farmers' discontent. "Anything for a change," has been the cry, "we cannot be worse off than we are at present." Lighten this discontent and the root of the difficulty is cut off. Already there is prospect for better prices in cereals. The wheat crop in Russia, France and Southern Europe is largely a failure. A general scarcity of grain abroad improves the chances for disposing of the surplus of the great corn crop in this country.

Furthermore, we believe the developments of the last three months have been an education to the more thoughtful members of the army of discontent.

The object lesson has been that the knife they intended to apply gave the patient no chance of life.

As the campaign progresses, it becomes more and more evident that the tariff is scarcely less important than the currency issue, and Major McKinley does well to so regard it. He sums up the situation under this head when he says: "The Republican party stands today as it always has stood, opposed to the continuation of an industrial policy which grapples industry at home, robs labor of its just rewards and supplies insufficient revenue to run the government."

Capital is never idle by preference, any more than labor. Fear of loss is the one thing which brings about stagnation, such as that from which we are now emerging. Dispell that fear by a rousing vote for McKinley and Hobart, and the new year will see the most astonishing revival of business in American history.

There is only one way for patriotic suffragists to do their whole duty—by a straight vote for the Republican candidates. Any other course is only half a stroke for business prosperity, that brings happiness in its train.

The Presidential Campaign.

AN INQUIRY INTO WESTERN AND SOUTHERN SENTIMENT.

In order that the TEXTILE WORLD might ascertain how the Western and Southern states regard the issues which are so prominent in the presidential campaign, a circular letter was sent to all the textile manufacturers who conduct their business in the smaller towns and rural districts of the states generally considered doubtful. As the voters of these localities will probably determine the election, every firm was requested to answer the following questions:

1. What have been your politics hitherto?

2. Which ticket do you expect to vote next November?

3. Are you for the free coinage of silver, or for gold standard, so called?

4. Do you prefer the McKinley tariff or the Wilson tariff?

5. Has there been much change of political opinion in your locality?

6. Which party will, in your opinion, carry your state in November, and which party will carry the country and elect the President?

Two hundred and twenty-three establishments replied, which are distributed in twenty states.

In past politics, the firms are thus divided:

Republican	164
Democratic	47
Prohibitionist	7
Independent	3
Uncommitted	3
Total	223

On the financial question, they stand:

FOR GOLD STANDARD.

Republicans	145
Democrats	26
Prohibitionists	4
Independents	2
Uncommitted	1
Total for gold	177

FOR FREE COINAGE OF SILVER.

Republicans	13
Democrats	14
Prohibitionists	3
Independent	1
Total for free coinage	31

One firm opposes both policies; two mill owners wish the coinage of silver to be restricted to the American product; three managers favor bimetalism; one person asks for stability; another for "equal value for all kinds of money;" and one expresses no opinion.

Concerning the tariff, the establishments may be placed as follows:

FOR THE MCKINLEY TARIFF.

Republicans	151
Democrats	15
Prohibitionists	5
Independent	1
Uncommitted	1
Total	173

FOR THE WILSON TARIFF.

Republicans	4
Democrpts	16
Prohibitionist	1
Independents	2
Total	23

FOR THE McKINLEY ACT MODIFIED.

Republicans	5
Democrats	1
Total	6

FOR A RATE BETWEEN McKINLEY AND WILSON ACTS.

Democrats	2
Prohibitionists	1
Total	3

FOR NEITHER TARIFF.

Republicans	2
Democaats	1
Total	3

FOR A HIGHER TARIFF THAN EITHER.

Republicans	2
Democrats	1
Total	4

FOR REVENUE ONLY.

Democrats	2

O OPINION, OR UNDECIDED.

Republicans	3
Democrats	7
Uncommitted	1
Total	11

How the manufacturers will vote, appears in the table below.

	Rep	Dem	Probs	Ind.	Silent	Totals
For McKinley,	154	15	2	2	1	174
For Bryan,	10	22	1	1	..	34
Third Ticket,	..	1	..	..	..	1
Third Ticket or McK.		1	..	..	..	1
Prohibitionist,	..	1	4	..	..	5
Uncommitted,	2	4	..	..	..	6
Silent,	..	1	..	..	1	2

NOTE: One Prohibitionist may vote the Republican ticket, also an Independent.

The following are the opinions about about which party will elect the President:

McKinley's election is expected by:

Republicans	135
Democrats	10
Prohibitiobists	6
Independents	1
Total	152

Bryan's election is expected by:

Democrats	33
Republicans	9
Total	32

Ten Republicans, four Democrats, one Indepennt and one firm of unknown politics consider that the election will be in doubt. Four Republicans, one Democrat and one Independent believe it will be close, but for McKinley. One Democrat says the Republicans will win only by hard work. One Republican declares that the people will not elect, hence making the result depend on Congress. Seven Republicans, six Democrats, one Prohibitionist and one firm of unknown politics express no opinion.

We shall now analyze the condition of public opinion in the United States.

Arkansas . . 8 electoral votes.

The returns show no changes, and the State will be strongly Democratic.

California . . 9 electoral votes.

Close and strongly in favor of silver. Republican observers think that McKinley will carry the State; still, some firms frankly admit that everything is in chaos, and the Democrats will prevail.

Delaware . . 3 electoral votes.

Factional splits among the Republicans may endanger their success. In several districts, there have been decided changes for gold. Probabilities favor McKinley.

Illinois . . . 24 electoral votes.

Conflicting reports prove this State to be extremely doubtful. Many Republicans consider it will turn for McKinley, but almost as many are in doubt. The owners of Democratic establishments are also divided. In some localities there has been no change, in others, equal losses; in a number, large Republican gains, in a few, especially among the farmers, a craze for silver, which seems to be dying out.

Indiana . . . 15 electoral votes.

Here, Republican chances are bright-

er, although the financial issue has torn both parties. Two-thirds of the reports indicate, however, Republican success. Ten districts show decided Republican gains; in one case, fifteen per cent. Business men favor gold, and the desire for silver seems wholly confined to farmers.

Iowa . . . 13 electoral votes.

This important agricultural State appears somewhat in doubt, though the conditions are becoming more favorable to Mr. McKinley. The Republicans have gained much within the last twenty days.

Kansas . . . 10 electoral votes.

Kansas will probably be close, with gains favorable to the Republicans.

Kentucky . . . 13 electoral votes.

Here conditions are complicated. Many Democrats would vote for McKinley, but they dread hostile Republican legislation like the "Force Bill." A Democratic mill owner, who will vote the Republican ticket says: "It is mighty mixed. You Eastern folks don't realize the extent of the craze for silver." Present indications favor the Indianapolis ticket.

Maryland . . 8 electoral votes.

Maryland is likely to remain Republican. Much change is reported.

Michigan . . . 14 electoral votes.

As Michigan is agricultural and chooses twelve of its electors by Congressional districts, much interest centres in the state of public opinion which appears evenly divided. In many places, great changes are reported, some of these show Republican gains. A few McKinley Republicans and several who support Bryan mention great changes in the opposite direction. Nine Republican firms believe the state will support McKinley, two are in doubt and and one expresses no opinion. Of the Bryan Republicans, two concede it to the Republicans, but two others that chances are even, and that Bryan will succeed if the Democrats and Populists are united.

Minnesota . . 9 electoral votes.

Although quite a number of Republicans feel sure that Minnesota is safe for McKinley, proprietors of establishments, who represent all parties consider the State close. The rural population leans towards silver; still, there are signs that the tide will gradually turn.

Missouri . . . 17 electoral votes.

This State, normally Democratic, will remain unchanged. Changes against free coinage of silver are offset by others in its favor.

Nebraska . . . 3 electoral votes.

All the textile manufacturers of Nebraska, expect Bryan to lose his own State, and McKinley to carry it by a very large majority.

Ohio . . . 23 electoral votes.

Very complete returns leave no doubt that Mr. McKinley ought to carry his State by an extremely large vote. Twenty-nine firms are unanimous that Ohio will be Republican. Of these, seven say there is no change, three report Democratic gains, and six Democratic losses; the remaining mill owners notice slight variations, or that the farmers favor silver. Mansfield, Senator Sherman's home, is for gold, but the county for silver. One Republican mill owner writes: "The more the people are enlightened on the money question, and the more discussion, the better for the Republican ticket." Another declares: "There has been considerable change in the political situation by all voters in favor of McKinley and the entire Republican ticket." Even Holmesville, which lies in a back woods and Democratic region, has Republican gains. A manufacturer writes, that "there is great objection among all thinking Democrats, to the Democratic platform. During the past month, the tide is turning from free silver to gold standard. Many voters are slow thinkers and will be all right if given time." A report says that "Medina County will give McKinley one to two thousand

majority." One manufacturer feel certain that "the silver sentiment is waning in Ohio. It was popular at first, but people are studying now and want honest money."

Oregon . . . 4 electoral votes.

The returns from Oregon are very instructive. In this home of Populistic thought, the Republicans have gained so much as to render the State already doubtful. In Pendleton, there has been "20 per cent. gain for McKinley in thirty days. Immediately after the Convention, Bryan would have carried the State. McKinley gaining fast."

Tennessee . . 12 electoral votes.

Tennessee is so strongly swayed by the financial issue that the chances of Republican success are very slight. Intelligent observers belonging to many parties agree that the State will go Democratic. Some firms consider it close, but favorable for Bryan. According to one report, "returns from August election held in this State, show Democratic gains of more than 20,000 as compared with 1894." Much rests with the Populist vote which is about 40,000.

Virginia . . . 12 electoral votes.

In some parts of Virginia, there are Democratic losses, but it is probably safe for Bryan. It may be of interest to mention that in one establishment all the employees will vote for McKinley.

West Virginia . . 6 electoral votes.

Reports show conditions to be stationary in this State, which will probably remain Republican.

Wisconsin . . 12 electoral votes.

Numerous replies from Wisconsin prove it to be strongly Republican. Out of twenty-nine firms, only two express doubts about McKinley's success. Eight districts remain unchanged, four have been much affected, ten have Republican gains, one of these ranging from 25 to 50 per cent. . Leading Democrats of another part are for McKinley. In Jonesville, "*many* young men that voted Democratic in 1892, will now vote Republican. It is expected that many farmers will be changed, from Free Silver, within a month, in this vicinity." "All employees," writes the head of one establishment, "are Republicans." A prohibitionist firm writes that many voters are at sea, but are seeking for information, so that they may know how to vote. According to one employer, "the craze for silver is abating. Railroad men with hardly an exception will vote for McKinley. The Germans are generally for gold." The superintendent of one mill says that "farming districts have strong silver leanings. I see nothing but silver literature. Should have the gold auguments also presented. The people have common sense and will see the point." This opinion is confirmed by another firm who hold that McKinley will gain, "after the money question has been better explained to the inland voter."

From the foregoing, it will be seen that Mr. McKinley's chances of carrying the country are growing more and more favorable, but that neither party will elect the President, except by hard work, and through a hotly contested campaign. The Western and Southern farmers are becoming an important factor in American politics. On all burning public questions, the rural population of the United States need enlightment, and once having it, can usually be depended upon to do the sensible thing. All reflecting persons admit that our monetary system ought to be reformed, especial in the direction of getting Government out of the banking business. But such a reform must be brought about with care.

"The coinage of gold or silver is entirely too much for the average citizen to know all about. I believe it should be left entirely to the banker and money men, with our representatives in Congress, and not for every wind-storm which blows over this country. Eight-

tenths of the people of this country do not know what the coinage really is and more so care less. The only thing they do want is for the United States government to guarantee each and every dollar, gold, silver or paper to be worth one hundred cents, and no more or less." (From the letter of Mr. Jacob Kalver, Youngstown, Ohio.)

That the financial question should have been forced into such prominence, is unfortunate. The root of present industrial distress does not lie there. On this point most of the firms heard from are agreed, a remarkable unanimity prevailing among the advocates of high protection, as well as those who favor a moderate tariff. Manufacturers generally feel that the tariff question is as important an issue as the financial, and that the former must ultimately be properly settled to ensure prosperity, although we must first settle the free silver question since it has been so unwisely raised by unthinking men.

When, in portions of the Central West, as, for instance, in the region round Sandusky, Ohio, the new crop of wheat brings forty to fifty cents a bushel, eggs are plentiful at eleven cents a dozen, the corn market is dull at twenty-five cents, and he is obliged to sacrifice, at low prices, his other produce, the farmer should not be judged too harshly if he catches at any straw which he thinks will bring him relief.

It behooves every one to investigate thoroughly the causes which have produced the industrial depression so prevalent, so that the remedy, after it has been recognized, may be applied, and the United States be enabled to resume their wonted activity and prosperity.

—The announcement that Judge Hilton has undertaken that every cent of the indebtedness of Hilton, Hughes & Co., shall be paid, does much to strengthen business confidence these days.

Style Suggestions.

The past few days has seen quite a movement in heavy weight kerseys. This activity has been due entirely to the cloak trade, and while they are consuming large quantities of kerseys, the price in almost every instance is for a fabric at $1.00 per yard.

There is a great demand for a good fabric at this price, and those who are fortunate to have such an article are doing the business. It is too late a date for any manufacturer to make samples for this trade, but it is the best policy for those who have fabrics which cannot be moved at a higher price, to place them at this and let them go.

There is as yet very little revival in the clothing trade, and duplicate orders, except in the case of a few "tailors to the trade," are very few.

The light weight season has been very disappointing, and the chief business has been the taking of orders for sample pieces, and while it is very discouraging to the manufacturer to have only such a limited production sold, his best plan, instead of shutting his mill down at once, as many have done, is to make the sample pieces required, then shut down and wait for duplicates, which are bound to come with the revival of business. There has been many disappointments and many surprises the present light weight season, and the surprises have been in the form of exceedingly low prices on good fabrics. Some of the fabrics shown will never be delivered, being too good for the money, and made simply to catch orders.

Some of the prices of lines shown are as follows: O. H. Hayes & Co., a line of Abbott's Scotch cheviots at 57 1-2 cents. These goods are rare value, and any manufacturer who makes cheviots would do well to examine them.

The Perseverance Co. have a line of worsteds at 95 cents.

Sterns, Sanford & Handy have a line

of cheviots at 65 cents, which are good value.

Sawyers are showing a line of cotton mix filled imitation covert cloth at 75 cents, less 5 per cent.

The Calumets shown by Sawyer, Manning & Co. are $1.10.

Jacob Wendell & Co. are showing 3-4 Lancasters at 22 1-2 cents, the Eclipse at 25 cents, and the 6-4 Champions at 60 cents.

There is on the market a line of wool crashes made by Sawyer, which are being sold at 75 cents. These are excellent colorings and a good fabric, and this is the character of stuff which will sell next fall, as they are just coming into popular favor. Whip cords and covert cloth still sell. There is also a demand at the prssent time for a green kersey at $1.25 per yard, and light colored shades at $1.10.

There is a slight movement of heavy weight cream shades in kerseys in high priced goods, but the demand is extremely limited.

Pennsylvania's Silk Industry.

The bureau of industrial statistics has in press an elaborate report on the manufacture of silk in the Keystone State. Pennsylvania had last year 129,152 spindles for winding and doubling, by the census report it had 89,429 in 1890, showing an increase of 39,723, or 44 per cent. Of spindles for spinning and twisting there were 390,427 in 1895, as against 228,786 in 1890, an increase of 161,665 or 70 per cent. Of spindles for braiding there were 37,808 in 1895, as against 30,217 in 1890, an increase of 7,592, or 25 per cent., making the total number of spindles, all kinds, in 1895, 557,412, as against 348,432 in 1890, an increase in 1895 over 1890 of 208,980 spindles, or 59 per cent. The total number of employees, skilled and unskilled in 1895 was 13,815, as against 9330 in 1890, an increase of 4485. The aggregate amount of wages paid out in the manufacture of silk in 1895, was $4,082,292.08, as against $2,725,285 paid out for the same class of labor in 1890, a per capita in 1895 of $295.50, as against $292.10 in 1890.

Semi-Annual Meeting of the New England Cotton Manufacturers' Association.

The semi-annual meeting of the New England Cotton Manufacturers' Association will be held at Profile House, White Mountains, September 22d, 23d and 24th. Reduced fares and hotel charges have been secured. The train will leave Boston from the Union station on the Southern & White Mountain division of the Boston & Maine R. R., September 22d, at 9.30 A. M.; Lowell at 10.09 A. M.; Nashua Junction, 10.34 A. M., and Manchester at 11.01 A. M. Special cars will take the party to the Profile House. The train stops at Plymouth for lunch. The Profile House will be reached at 4.35 P. M. The headquarters of the Association will be at the Profile House, meetings being held in the ball room. The programme is arranged with a view of making afternoons free for excursions to the numerous points of interest. If the weather is unpleasant, afternoon meetings may be held. Those proposed for membership are invited to attend the meeting and participate in the discussion. Members are at liberty to invite guests, including ladies.

The complete programme will not be ready until the day of starting, when it will be distributed on the train. The first session will be held September 22d at 8 P. M., when Robert P. Porter, of Cleveland, Ohio, will lecture on "Cotton Manufacturing in Japan." On the following evening, William P. Wilson, secretary and director of the Philadelphia Museums, will address the association on "What the Philadelphia Museums can do for the New England Cotton Manufacturers." He will exhibit

several thousand samples of different lines of cotton goods, such as are made by European manufacturers. The programme will contain topical questions.

The other sessions will begin at 9.30 A. M. on September 23d and 24th, at which the following papers will be presented:

"Differential Motions," Joseph Nasmith, Manchester, England; "Condensed Cotton Yarn and the Condenser Card," C. P. Brooks, Harpurhey, England; "Cotton Manufacturing in China," Albert W. Danforth, Shanghai, China; "Suggestions for Future Work of the Association," Russell W. Eaton, Brunswick, Maine; "Some Problems of Weaving," Alfred Hawkesworth, Montreal, P. Q.; "Power Required to Drive Gingham Looms," George W. Weeks, Clinton, Mass.; "The Methods of Manufacture and the Use of Ring Travelers," A. Curtis Tingley, Providence, R. I.; "The Manufacture and Use of Spinning Rings," George A. Draper, Hopedale, Mass.; "The Use of the Comber in Cotton Manufacture," E. W. Atkinson, Boston, Mass.; "A New Method of Baling Cotton," Joseph H. Kendrick, Providence, R. I.; "Practical Theory on Steam Making from Shovel to Stop Valve," Winthrop Thayer, Boston, Mass.; "Power Transmission," F. H. Underwood, Boston, Mass.; "A Few Suggestions to Managers and Superintendents," John S. Adams, Jr., Adams, Mass.

Increasing Sales of Print Cloths.

The curtailment of print cloth production in Fall River has borne good fruit. Sales the last week in August nearly equalled the normal production, and exceeded the curtailed output by 118,000 pieces, according to conservative broker's estimates. It is a long time since there has been such a showing. Prices, while very low, are a shade firmer. It takes an old manufacturer to remember when local stocks of cotton were lower. What is now needed is one of three things—easier money, lower raw material, or an advance on product. With slightly increased margins there will be a speedy broadening of activities.

How Bryan Stands on a Wool Tariff.

There is no doubting Candidate Bryan's opinion on a wool tariff, for his speeches in Congress state his views. In 1892 he said:

"I, therefore, Mr. Chairman, denounce as fallacious, as unworthy of consideration, the only reason that can be given in support of a tariff on wool, *i. e.*, a protective tariff and for protective purposes."

Again in January, 1894, he showed his disregard for the farmer, whom he is now trying to win to his support, in the following words:

"It is immaterial, in my judgment, whether the sheep grower receives any benefit from the tariff or not. Whether he does or does not; whether the wool manufacturer collects a compensatory duty from the consumer of woolen goods and pays it over to the wool grower, or collects it and keeps it himself; or doesn't collect it at all, and therefore doesn't need it,—I am for free wool."

Manufacturing Centres Compared.

From the breaking out of the Revolutionary War until comparatively recent years, Philadelphia was the chief manufacturing city in the United States, but in 1880 New York stood ahead of Philadelphia in manufactures, while in 1890 the Quaker city fell to third place, Chicago taking the second. While New York is at the head in point of the total production, it is exceeded by other American cities in certain industries. In the manufacture of shirts Troy comes first, New York second and Philadelphia third. In woolen goods Philadelphia is far in advance of all other cities,

Lowell, Mass., occupying the second place. In the manufacture of hats and caps Philadelphia comes first and New York second. In hosiery and knit goods Philadelphia is first, Cohoes, N. Y., second, and Milwaukee third, New York occupying a very subordinate place. In the manufacture of men's clothing New York comes first, Philadelphia second, and Chicago third. In the manufacture of women's clothing New York comes first, Chicago second and Cincinnati third. In the manufacture of boots and shoes Lynn, Mass., is first; Brockton, Mass., second; Haverhill, Mass., third, and St. Louis, fourth. Fall River is first in cotton goods, with Lowell second.—[Dry Goods Economist.

Banquet of Textile Club.

The Textile Club held its first banquet of the season at Young's hotel September 5. There were nine members present. In the absence of the president, Vice-President McArthur presided. The guest of the occasion was William Firth. The meeting was of the social order. Informal speeches were made by several members.

—The extensive orders placed for iron and steel for immediate delivery, within two or three weeks, conclusively shows that many large concerns believe bottom has been touched on raw materials generally. A notable instance is the B. F. Sturtevant Co., which has just laid in its year's stock of pig iron. A few concerns of this calibre, backing their convictions, are of inestimable value in pulling material markets out of a rut. Courage is no less necessary in business than in war, and corporations daring to take the initiative in buying after a period of stagnation, seldom fail to put up the market for their competitors.

—With one of our esteemed textile contemporaries afflicted with the free silver mania, and another with free trade tendencies, the textile industry is not getting the solid support of its trade journals in the line of protection and sound money, which to our minds, is the only course that will save our industry, as well as all others, from ruin.

—The American annual silver product is equal to only 16 per cent. of our wheat, 21 per cent. of our cotton, 6 per cent. of our corn, 5 per cent. of our pork and beef, and but one-half of 1 per cent. of all our other products. Shall we then disregard and sacrifice all our other interests to so inconsiderable a portion of our annual products, simply because the more advanced nations of the earth have ceased to use it as formerly?

—The great auction sale of dress goods made by the Arlington Mills, Lawrence, Sept. 2, was attended by nearly 600 buyers representing the whole country. Bidding was brisk, the average price secured being thought good, although much below nominal quotations. The estimated proceeds were $600,000.

—The terms of the new treaty between France and Madagascar, might prove injurious to United States cotton cloth trade with that island, were it not for the fact that the coarser products are mostly in vogue there. French production is mostly in a higher line.

—The coolest opening week in September, in 24 years, did much to increase the interest in fall dress goods. The tendency is toward fancy designs.

—Shipments of raw cotton by the Fall River line, Labor day, were heavier than on any one day for two months previous.

PERSONAL RECORD.

Recent Changes.

In order to give all the news in this line, it is brought down to the mere facts; the name of the man is given first, the position he is holding, and the mill he is now employed in, follow next, while the place where he was previously engaged is given last, if the information is at hand.

William J. Carrigan, overseer of the cloth room, Globe Mill, Woonsocket, R. I.; formerly of Blackstone, Mass.

Superintendent Fitzpatrick, to take charge of the Manhattan Print Works, Passaic, N. J.; formerly of the Empire Print Works (now shut down), Bloomfield, N. J. Both plants operated by the Worthen & Aldrich Co.

William G. Ratcliffe, designer at Conshohocken, Pa.; formerly superintendent for Thomas Kitson, Stroudsburg, Pa.

William Cannon, has accepted a position with Jacob Miller & Son, 16th and Read Sts., Philadelphia, Pa., formerly finisher with the Perseverence Worsted Co., Woonsocket, R. I.

Frank Mackin, grinder, Easthampton, Mass.; formerly Taunton.

H. K. Pigman, boss carder, Muskingum Valley Woolen Mfg. Co., Dresden, Ohio; formerly Barnesville Woolen Mills.

Horace M. Barnes, president of the Globe Yarn Mills, Fall River, Mass.; vice William Lindsey resigned.

Charles Balthaser, boss knitter, Globe Knitting Mill, Shoemakersville, Pa.; formerly with Leesport Knitting Co.

E. H. Ellis, superintendent Roxbury Mills, Plymouth, Penn., has accepted a like position with the Paramount Knitting Co., Chicago.

Edward McPlouff, late selling agent for the American & Washoline Co., is now superintendent of dyeing and finishing with John Lafferty & Brother, Philadelphia.

A Booth, for 19 years with Pennsylvania knitting concern is now superintendent of the Parker Ford (Pa.) knitting mills.

M. H. McIlvoy, formerly with the Mascoma Flannel Co., Lebanon, N. H., is now boss dyer for the Merchants' Woolen Co., East Dedham, Mass.

W. A. West, formerly of the Henrietta (N. C.) Mill, is now weaver at the Pearl Cotton Mills, Durham, N. C.

Daniel Welch, formerly of Bridgeton, Maine, has accepted a position as finisher with the Robinson Mills, South Windham, Maine.

Charles Prew, overseer of carding at the Hamilton Woolen Co., Amesbury, has resigned to accept a similar place at the Canoe River Mills, Taunton.

W. B. Zimmerman, loom fixer of Concord, N. C., has gone to the Clifton (S. C.) Cotton Mills.

W. S. McDonald, late of the Payne Cotton Mill, Goldsboro, N. C., has become overseer of carding at the Atherton Mill, Charlotte, N. C.

W. R. Worthington of the Slater Woolen Co., Webster, has resigned to go to Worcester.

M. J. Lynch has left the Hockanum Co., Rockville, Ct., to take a place in Pittsfield.

Chas. Smith, formerly in the card rooms Totokett Mills Co., Norwich, Ct., has accepted the overseership of combing at the Berkshire Mills, Adams, Mass.

J. L. Askell as resigned as superintendent of the Swift Mfg. Co., Columbus, Ga., to accept a similar place with the Pepperton Cotton Mills, Jackson, Ga.

E. C. Barnhardt, superintendent of the Edna Cotton Mills, Reidsville, N. C., has resigned to become superintendent of the Asheville (N. C.) Cotton Mills.

W E. Tisdale, late carder Lockhart (S. C.) Cotton Mills, has gone to the Edna Cotton Mills, Reidsville, N. C., in a similar capacity.

C. B. Suttle, formerly of the Ada Cotton Mill, Charlotte, N. C., has become overseer of spinning at the Lincoln Mill, Lincolnton, N. C.

Henry Roberts formerly section hand with the West Point (Ga.) Mills, is now boss spinner with the Cedartown (Ga.) Cotton Mills.

C. S. Wilkinson, late boss weaver at the Exposition Mills, Atlanta, has gone to Alabama City, Ala., in a similar capacity.

John Risch, late in the Renfrew weave shop, Adams, has gone to North Adams, as a loom fixer.

A. L. Stevens, formerly second hand at Exposition Mill, No. 2, Atlanta, Ga., has taken a similar place with the Hamberger Cotton Mill, Columbus, Ga.

J. F. Gossett has gone from the Camden (S. C.) Cotton Mill, to the Granby Cotton Mills, Columbia, S. C.

M. E. Stevens, late of the Lannett Mill, West Point, Ga., has become carder at the Exposition Cotton Mill, Atlanta.

Hugh Diamond, formerly overseer of the mule room of Acushnet Mill, No. 2, New Bedford, is now overseer of the Mt. Hope Yarn Mill, North Dighton.

Acceptances.

John B. Ray, overseer of spinning at the Whittenton Mfg. Co., Taunton, Mass.; formerly of Jewett City, Conn.

Levi W. Drury, Jr., of Woonsocket, R. I., has accepted a position as overseer of a picker room in Cohoes, N. Y.

Mr. Gill is the new designer at the Lancaster Mills, Clinton, Mass.; formerly of Lawrence.

Samuel Bowker, dyer with the Colonial Woolen Co., Trenton, N. J.

James Wallace has succeeded his father as boss spinner for the Tallahassee (Alabama) Mills, the place the elder Wallace occupied for nearly half a century.

C. P. Brooks, an English textile expert, has been secured by D. A. Tomkins Co. of Charlotte, N. C.

D. M. Niece has taken charge of the Hinesville Cotton Mill, Mount Pleasant, N. C.

H. C. Gildard has become superintendent of the Highland Park Cotton Mills, Charlotte, N. C.

Mr. Wyatt of Whitney, S. C., has become overseer of the cloth room at the Exposition Cotton Mills, Atlanta, Ga.

J. T. Jackson, of Asheville, has become superintendent of the Edna Cotton Mills, Reidsville, N. C.

A. D. Bradley, of Augusta, Ga., has become boss weaver at the Jewell (Ga.) Cotton Mill.

J. T. Davis, of King's Mountain, N. C., has become overseer of the cloth room, at the Lancaster (S. C.) Cotton Mill.

Hiram Rathburn has been appointed superintendent of the Madison (Me.) Woolen Mills.

W. M. Huston has taken charge of the Lanett Mill, West Point, Ga.

Matthew O'Brien has become overseer of dyeing at the Cocheco Woolen Mill, East Rochester, N. H.

Johnson Magee is stated as overseer of spinning at the Dwight Mills, Alabama City, Ala.

James Kellar has become spinning second hand in No. 1 Exposition Cotton Mill, Atlanta.

Edward Campbell, of Newton Lower Falls, is now in the finishing room of the Nonantum Worsted Mills.

Geo. Barnes has become overseer of carding for the Birmingham (Ala.) Mfg. Co.

Resignations.

Conrad Zickendrath, overseer of weaving, Merchants Woolen Mill, East Dedham, Mass.; succeeded by Mr. Weisstein of Rockville, Conn.

E. F. Murphy, second hand of dyeing with the Oneita Knitting Mills; his employees presented him with a gold headed cane.

George Taylor, superintendent of Robinson Mills, South Windham, Me.

Charles White, superintendent of the Manhattan Print Works, Passaic, N. J.

Louis Helm, for eleven years percher with the Broad Brook (Conn.) Co.

Michael McCaffery, overseer of the cloth room, at the Globe Mill, of the Social Mfg. Co., Woonsocket, R. I.

Thomas Maxwell, overseer of cloth room, at the Millbury (Mass.) Cotton Mill; to engage in newspaper work it is reported.

J. Meiklejohn, superintendent of the Paton (P. Q.) Mfg. Co., has resigned. He came from England two years ago.

William Coville, shipping clerk at the Broad Brook (Conn.) Mills has resigned.

Mr. Fanning, wet finisher at the Broad Brook (Conn.) Mill, has resigned.

Edwin Haigh, overseer of spinning in the Broad Brook Mill, has resigned after 30 years of service.

J. H. Robinson has resigned as superintendent of the Columbia (Ala.) Cotton Mills.

W. A. Henderson has resigned as superintendent of the Highland Park Cotton Mills, Charlotte, N. C.

C. P. Hubert has resigned as overseer of the cloth room at the Exposition Cotton Mills, Atlanta, Ga.

Henry Dawson, second hand in the Windsor dyeing department, North Adams.

J. J. Costello, superintendent, New Britain (Co.) Knitting Mills.

Jacob S. Coolidge, for more than 20 years an overseer of the Merrimac Mfg. Co., Lowell.

M. J. Quirk has resigned as superintendent of the Madison (Me.) Woolen Mills.

W. H. Carson, boss finisher, Riverside Mills, Lebanon, N. H., has resigned.

Joseph Heppenstall, superintendent of the Oneka Mills, New Bedford, has resigned.

Wm. Nolan, long overseer of weaving in the Loraine Mills, Pawtucket, has resigned.

Wm. Allen, spinning second hand in No. 1 Exposition Cotton Mill, Atlanta, has resigned.

T. F. Hall, for nine years overseer of weaving for the Broad Brook (Ct.) Co. has resigned.

W. A. Titley, carder for the Broad Brook (Ct.) Co., has resigned.

Promotions.

John W. Pead has been appointed agent of the Merrimac Mfg. Co., Lowell, to succeed the late Joseph S. Ludlam. Mr. Pead has been with the company 31 years. He was first employed in the finishing department, then in the dye house and repair shop. Later he became a pattern maker and draughtsman and afterward assistant to the engineer who reconstructed the works. He was finally installed as superintendent of the mechaical department. In July, 1888, he became superintendent.

William L. Jenkins, late overseer of spinning with the Clifton No. 1 (S. C.) Mill, has been made assistant superintendent, his old place being filled by M. Cobb.

Robert D. Brown, formerly of the Piedmont (S. C.) Mill is now overseer of spinning at the Clifton (S. C.) Mill No. 3.

Frank Hopewell, of Boston, has been chosen treasurer of the Sanford (Maine) Mills to succeed John Hopewell, Jr. of Cambridge. Mr. Hopewell has previously been assistant treasurer.

Everett Perkins of Paris, Maine, formerly of Lewiston, has been advanced to overseer of his room at the end of his first year, at the Belding Silk Works, Rockville, Ct.

Presentations.

John A. Perkins, until recently overseer of weaving at the Pontiac Mill, Pontiac, R. I., was presented, by the help, with a handsome roll-top desk. Mr. Perkins goes to Salem, Mass., as overseer of weaving at the Naumkeag Steam Cotton Mills.

William B. Notman, on retiring from the employ of the Victor Knitting Mills, Cohoes, N. Y., was presented with a diamond ring.

John Nolan, formerly of the Lorraine Mfg. Co., at Pawtucket, R. I., who has accepted a position in North Adams, Mass., was presented by his Pawtucket friends with a gold watch, chain and charm.

Joseph Conn, upon his resignation as overseer of weaving, at the Union Mills, of the Aldrich Mfg. Co., Moosup, Conn., was presented with a handsome secretary by his fellow employees.

Daniel Everly, overseer of cotton weaving at the Lorraine Mill, Pawtucket, has resigned after 12 years service, to take a place at the Beaver Mills, North Adams, Mass. He was presented with a tea set.

Mr. and Mrs. Cyrus Arnold of Woonsocket, recently celebrated the 50th anniversary of their wedding, and received many gifts. Mr. Arnold past 30 years superintendent of the White Mill, Woonsocket, which with the Globe was built by the late Geo. C. Ballou, Mrs. Arnold's father. Mr. Arnold is a director in the Woonsocket Machine & Press Co., and a member of the firm of H. Jeffrey & Co., loom harnesses. He has held several public offices.

John Morrison, for 15 years color mixer at the Windsor Print Works, North Adams, has resigned to accept the assistant superintendency of a similar concern in Fall River. He was presented by his associates with a rosewood combination desk and book case, the printers and engravers tendering him a dinner at a local hotel.

Mr. and Mrs. Gideon W. Purnell, 70, recently celebrated the 50th anniversary of their marriage, being extensively remembered by friends. They have lived in Rockville, Ct., since coming to America, in 1862. Mr. Purnell was overseer of the burling and mending departments and cloth inspector for the Florence Co., until that mill closed.

Ira H. Cross, formerly manager Woonsocket (R. I.) Bobbin Works, now of Nashua, N. H.; gold headed cane. Frank A. Morrill, superintendent Glenark Knitting Mills, made presentation speech.

Deaths.

William James Dickey, 82, at Baltimore, Md., of Brights disease. He was a native of Ireland. Mr. Dickey was president of the Manufacturers' National Bank, and head of the woolen manufacturing concern, Wm. J. Dickey & Son, whose mills are located near Baltimore, Md.

James M. Hart, aged 80, at Oswego, N. Y. He at one time was for several years interested in cotton manufacturing at Oswego.

Christopher Grant Holland, at Danville, Va. He was one of the oldest and most respected citizens of the city. Together with Mr. F. X. Barton, he established the Morotock Cotton Mills, the initial step in the cotton manufacturing industry around Danville.

John Haigh, aged 63, at his home in Somerville, Mass. He was of the firm of Gilman & Haigh, proprietors of the Middlesex Bleachery Dye & Print Works. He was a native of England, and came to America in 1855, and secured employment at the Pacific Mills, Lawrence, Mass. He was one of the most prominent Masons in the country, and had been a representative to the State Legislature from the 5th Essex district on the Republican ticket.

Edward Baker, overseer of carding in No. 4 Mill, at Stottville, N. Y., died recently at his home of heart disease.

Moses G. Rosenblatt, managing partner of the silk importing house of Dreytus, Kohn & Co., which assigned in July, died at his home, No. 54 West 52nd St., New York City, recently.

Benjamin W. Blakeley aged 58, Chester, Pa. He was well known in cotton manufacturing circles and when the concern founded by his father, was formed into a corporation, the Arasapha Mfg. Co. in 1885, he was elected president.

James Regan, aged 40, at his home in Woonsocket, of cancer in the stomach. He was for years second hand in the Lippitt Woolen Mill.

William P. Hughs, formerly boss dyer of the Sayles & Jenks Mill, Warren, Mass., was buried at that place, August 16th.

Welles Symonds, aged 87, at his home in Rockville, Conn. He was finisher in the New England Mill for thirty years.

William Dunn, died recently in Plymouth, Mass., of apoplexy. He was employed in the Plymouth Cordage Co., over forty years.

Roland Whitney, president of the Falls City Jeans & Woolen Co., Louisville, Ky., died recently at Wequetonsing, Mich. Mr. Whitney was born in New England, and was 80 years old.

John Graham, 70, of John Graham & Co., linen importers of New York; apoplexy and pneumonia.

Warren H. Baker, 56, of Boylston, Mass., for many years a wool manufacturer in Stafford Springs, Ct.; long illness.

John Greyson, 80, father of Geo. Greyson, the Darby (Pa.) manfacturer. He was born in Yeadon, England, where he was a mill manager.

Henry M. Sweeney, 86, of Georgetown, D. C., where his whole life was passed. He was apprenticed to a cotton manufacturer when eight years old. Later he learned the dyeing trade and engaged in manufacturing cotton cloth. He had twice been mayor of the city, and was prominent in local works.

Nicholas Downey, 38, for 18 years stock keeper for the Green Knitting Co., Amsterdam, N. Y., died recently after an hour's illness.

Herman Faller, 68, of Rockville, Conn., formerly a loom fixer in the old Leeds Mill. He came to America 40 years ago.

Wm. A. Greery, 83, formerly overseer carding Richmond Mfg. Co., Bristol, R. I.

Thos. Wood, 45, overseer Globe Yarn Mills, Fall River; very suddenly.

Edmund Hart, 65, Slater Woolen Co., Webster, Mass.; formerly of Putnam Ct.

Henry G. Hill, 47, manager Geo. H. Gilbert Mfg. Co.'s account with Oelbermann, Dommerich & Co. at the Gouverneur Hospital, N. Y.

Joseph Wild, 83, of Joseph Wild & Co., importers of rugs, etc., North St., N. Y., at his home, Bay Ridge, L. I. He was born in Yorkshire, Eng., coming here in 1850, as selling agent for John Crossley & Son, Halifax, Eng. As Wild & Julian, he soon began importing mats. The present firm was formed in 1865.

Chas. A. Read, proprietor Read Carpet Co., Bridgeport, Ct.; many years ago a cloth manufacturer in Pownal, Vt. He leaves one son T. W. Read, treasurer and secretary of the company.

Robt. Ruddy, president Ruddy Thread Co., Worcester; a prominent mason, formerly of Norwich, Ct.

W. W. Witham, of Cromford, England, a manufacturer and author of a book on cotton spinning. Was the father of H. L. Witham, superintendent of the Roswell (Ga.) Cotton Mills.

John G. White, 63, of Cambridge; from pneumonia. He had for several years been Boston agent for Beach & Co., of Hartford, importers of dyestuffs.

T. K. Hastings, of Aurora, Ill., proprietor of Hastings' Wool Scouring Mill; from paralysis.

Moses Shaw, 80, of Union Bridge, Md. About 1830, he erected the Shepherd woolen factory and later conducted a similar business in Sykesville and Emmittsburg.

On Pleasure Bent.

Jacques Friedricks, overseer of dyeing at the River Spinning Mill, Woonsocket, has returned from Belgium.

Eben S. Draper of Hopedale, has gone on an extended trip to Europe.

F. S. Mosher, superintendent Henrietta Cotton (N. C.) Mills, is making an extended Northern tour with his family.

A. G. Martin, superintendent Kincaid Mfg. Co., Griffin, Ga., is with Mrs. Martin, making a trip North.

Wm. Firth, of Boston, has returned from a two months' European trip with his family.

James A. McDonald assistant paymaster, Arlington Mills, Lawrence, has gone on an extended Western trip.

Warren Lincoln, foreman of Whitin Machine Works' foundry, Whitinsville, has returned from California.

Miscellaneous.

In the item reporting the admission of Mr. J. Harry and Mr. Fred H. Longbottom to their father's firm, which the World and several other papers recently printed, an error was made in not mentioning the change in the firm title. The new firm is styled S. Longbottom & Sons, and not as formerly, Longbottom & Lobley. Their mills are located at Crum Lynne, Delaware Co., Pa., running on fine worsted yarns.

James Burdick, overseer in the Greenwoods Co, New Hartford, Conn., was recently injured while coasting down hill on his bicycle, three of his ribs being broken.

Geo. D. Fleming, formerly traveling salesman for the Monitor Carpet Mills, Philadelphia, Pa., Dorman Bros., proprietors, and in charge of their Bourse office, has since March 16th, assumed the management of the Victoria Mills, office in the Bourse, and will also represent Messrs. Thomas Devlon's & Sons of Philadelphia, on the road.

Abraham Netherwood, superintendent of spinning with the Norfolk & New Brunswick Hosiery Co., New Brunswick, N. J., lost both his arms recently while repairing a belt.

Thomas H. Barker, of the firm of Booth & Brother, carpet yarn spinners, Lower Merion, Pa., has received the Republican nomination for the assembly from Montgomery County.

Rufus A. Soule has been elected president of the Dartmouth Mfg. Co, of New Bedford.

Harry Milner, son of John Milner of Moosup, Ct., has gone to Leeds, Eng., for a course of study.

H. N. Slater, the Rhode Island manufacturer, has bought the Thayer estate, Back Bay, Boston, for about $150,000, and will occupy it.

Alex. Crow, Jr., of the Caledonia Worsted Mills, Phila., has been nominated as the anti-combine candidate for sheriff.

—Jos. T. Pierson, Jr., son of the well-known hosiery board and box manufacturers, Philadelphia, recently made a foot journey from Philadelphia to Reading, Pa., through the Cumberland Valley, in company with W. G. Shields, Jr., of Germantown. Mr. Shields did not quite complete the walk but left his plucky comrade near Lancaster. Young Pierson is finely trained in athletics and thinks nothing of reeling off 40 to 50 miles a day when the walking spirit takes him.

—The paragrapher remarks that while the productions of cotton yarns has been curtailed, campaign yarns continue to be reeled off livelier than ever.

QUESTIONS AND ANSWERS.

Under this head we shall undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

Handkerchiefs.

Editor Textile World:

Can you inform me where there is a mill weaving cheap cotton handkerchiefs?

SHORES.

[We should be glad to put any interested mill in correspondence with this inquirer.]

Book on Cotton Yarn.

SPRINGFIELD, MASS., Aug. 28, 1896.

Editor Textile World:

Can you tell me where I can get a book of instruction on cotton yarn, especially how to size it; how it is manufactured from the cotton field for the sale-room, and how to tell poor from good yarn? I read the TEXTILE WORLD every month, which gives me a lot of information.

Yours truly,

CLAY.

[There is hardly any one book which gives all the information which you want to know on the subject of cotton manufacturing. It is a very large subject. A few of the general manuals on this subject contain some information in regard to sizing. The most complete work is Depierre's treatise on the finishing of white, dyed and printed cotton goods. This book contains a number of simple patterns, and is profusely illustrated. Price is $12. Other books which we might mention are Naysmith's "Students' Cotton Spinning," price $2.50; "Cotton Spinning," by Marsden.

We do not think you could learn from any book, unless the practical experience went with it, how to tell poor from good yarn or perfect from imperfect cloth. This knowledge does not come from book learning.]

Design Paper.

LEXINGTON, MASS., Aug. 29, 1896.

Editor Textile World:

Will you inform where in Boston I can obtain Posselt's publications, also where I can get square designing paper? G. H. L.

[The publishers of the TEXTILE WORLD can furnish any of Posselt's publications, or indeed any other textile publications, on receipt of publishers' price. You can obtain square designing paper from F. Jones & Co Philadelphia.]

Carey Pulley.

Editor Textile World:

Do you know who makes a Carey pulley? If so, kindly inform me and oblige,

Yours very truly,
G. H. GREEN.

[We think you must have reference to the firm of Thomas K. Carey & Brothers, Baltimore, Md. They handle pulleys and shafting, and we believe they also manufacture.]

Finding Mean Effective Pressure.

Editor Textile World:

How do you find the mean effective pressure and horse power of an engine from an indicator card? How do you find the length of lines to add together? INQUIRER.

[If it is desired to find the mean effective pressure of an indicator card by ordinates, divide the card into any number of equal parts, usually ten (10).

Measure the height of the card in the centre of each of these divisions, add together, and divide by the number of equal parts into which the card was divided. This will give the mean height of the card. Multiply the mean height by the scale of the spring with which the card was taken to find the mean effective pressure.

Multiply the M. E. P., length of stroke in feet, the area of the piston in square inches, and the number of strokes per minute together, and divide the result by 33,000, to find the horse power.]

Safety Appliance for Boiler.

Editor Textile World:

Dear Sir; I would like a little of the valuable space in your magazine to say a word on the subject of boilers, and the appliances at present in use for the safety of same. As readers are aware, the number of accidents occuring from low water is very great, and I would like to know if there is any appliance on the market better than a few which I have had some experience with, and which in my opinion are not thoroughly reliable.

First, I will take the fusible plug in a boiler. Where the feed water contains heavy scale-forming matter, if not watched closely, the plug soon becomes coated with scale. That, and dirt accumulating on the outside, and the possibility of the metal becoming hard, renders it useless.

The second is an appliance we have, which consists of a pipe inserted in top of boiler to low water mark, with a valve outside with metal plug and whistle. When water gets below end of pipe, steam is supposed to take place of water in pipe, and melt the plug, but I find it is a failure nine times out of ten, as I have tested them under various conditions. First, by allowing water to get below mark; second, by blowing boilers down and leaving whistle valves open, and the plug remained intact, thus rendering them of no use.

Third, there is an expansion appliance with pipe leading to low water mark, which is liable at any time to make up, thus making it not trustworthy.

Then we have the so-called safety columns. Now I have had to take columns down and clean pipe leading to them, which makes them non reliable. Then there is the ball float idea, which is subject to perforation, or lever becoming disarranged, thus demanding strict attention, and there are others of the same calibre, which are of little use.

I think it is the duty of every engineer to study and try to find out the most reliable appliance that it is possible to obtain, as the destruction to life and property is enormous, and I shall feel much obliged to you or any of your readers for suggestions, or any appliance you can name better than the above.

Thanking you for taking so much of your time and space, I remain Yours,
Sayleswille, R. I. ANXIOUS.

[Every appliance which, in a measure, adds to the safety of a steam generator, is an advantage, but no mechanical device has yet been constructed that cannot be put out of order if it is abused. It makes little difference whether this abuse comes in the form of the chemical action of water, or the ignorance and carelessness of the man in charge.

Every boiler, and the fittings connected with it, should have expert care, and be inspected just as often, if it is equipped with every known safety device, as though it had none.

One great mistake among engineers and power users is thinking that safety devices take the place of skilled men. This is not so, and they were never intended to. They are of great assistance to the engineer, and it is always economy to see that the boilers are equipped with them, for many a boiler has been saved by the timely warning of a safety water column, when for some reason the water was running too low, but it is as absurd to think they take the place of an engineer as it is to think that a safety valve or gauge glass does. Many a safety valve has become inoperative by being stuck down by sediment, and required attention of an engineer, but it would be absurd to think a boiler should for that reason be run without one, or that when one is used no engineer is required. Other safety appliances come in the same category.—ED.]

Resumptions.

The Knitting mills of the Root Mfg. Co., Cohoes, N. Y., resumed operations on full time August 24.

The Victor Knitting Mills, of Cohoes, also started in full August 24.

—Contemporaneous with the news of the result in Maine is the announcement that the immense plant of the Amoskeag Mfg. Co., which was shut down on August 8 for an indefinite time, is to be started up in all departments September 28. This means the immediate employment of some 7000 hands, who will have been idle for nearly two months.

COTTON DEPARTMENT.

Imitation, or Mock Leno.

Fabrics which come under this division of textiles are widely different from the regular leno and gauze weaves, inasmuch as the warp threads in mock leno do not twist round each other; yet, the effect produced by using certain weaves and giving proper attention to the spacing is often such that one might easily be deceived, were not the characteristics of the various fabrics clearly understood.

A word at this point about the terms "gauze" and "leno" may prove of interest. They are often confounded with each other, a leno fabric often being called a gauze weave, and vice versa, although they both belong to that class of fabrics which are placed under the head of "crossweaving," still the two are quite distinct and separate.

In pure gauze the whip thread changes its position from one side of the standard thread to the other, at every pick inserted into the shed, the

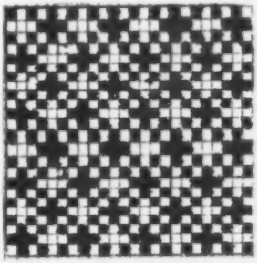


FIG 1

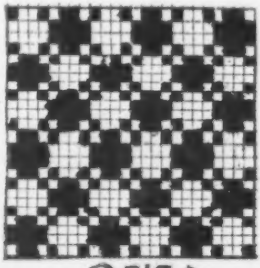


FIG 2

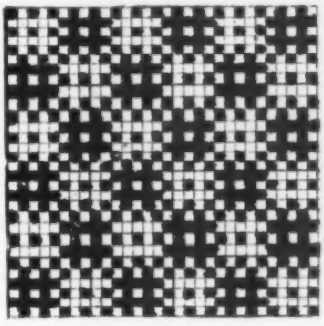
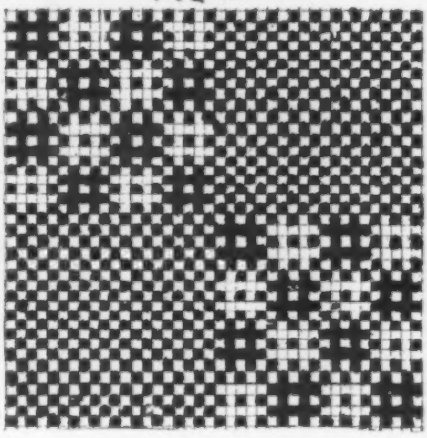


FIG 3.

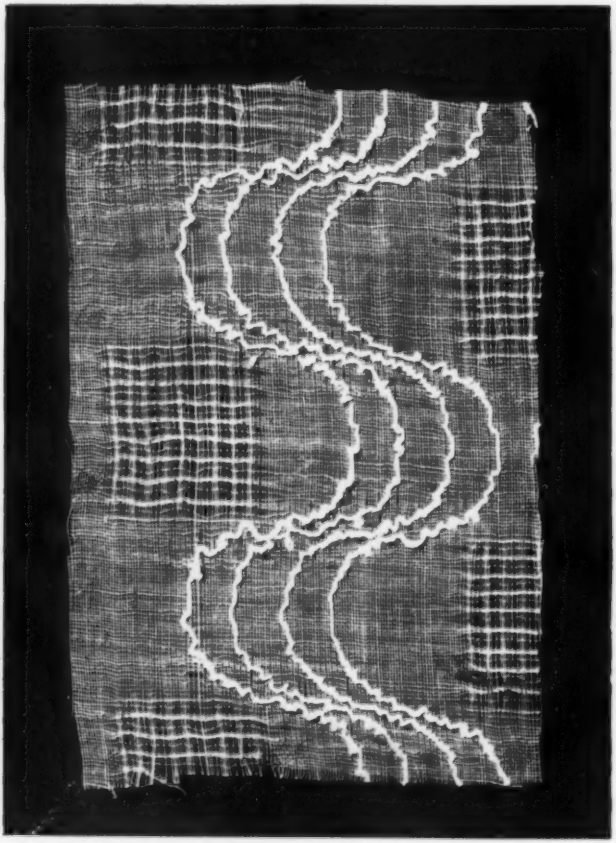


B A

FIG 4

complete weave repeating on two picks. This is a very difficult weave, especially when tender yarns are used, the strain on the doup and whip thread, caused by the alternate crossing, being such that frequent breaks occur.

A leno fabric on the other hand, is known by the fact that the whip thread



instead of changing its position at every pick, only does so at various intervals. Hence, we speak of the 4 and 4 regular tie diamond, lace and net weaves, all resulting from crossing at different intervals, and in combination with other doups and their whip threads. It can thus be seen that leno weaves give a large scope for ornamentation, and play a far more important part in the production of pattern than does the gauze.

In the mock leno weaves, which are commonly used in low grade draperies and dress goods, the effect is produced by using such a weave as will enable those warp threads, placed in the same dent of the reed, to lie closely together, at the same time intersecting quite easily with the filling, after a certain number of picks. The order of lifting is so arranged as to force such a number of picks together as will conform to the warp effect. Such a weave as that shown at Fig. 1, is not uncommon, the 3 and 3 mock leno usually reeded 3 per dent, spaced with one or two empty dents between the threads. A good combination is the 4 and 4 mock leno, shown at Fig. 2.

Perhaps the most commonly used of

all the mock leno weaves, for the production of stripe effects, is that shown at Fig. 3, the 5 and 5 mock leno reeded 5 per dent, with a spacing to suit the requirements of the construction. Novel and pleasing effects are often produced by forming squares of mock leno alternating with the plain weave, the one square forming a figure while the mate square forms a regular plain. Fig. 4 is a design constructed on this principle, the 5 and 5 weave being used; 40 warp threads and picks represent the repeat. By crossdrawing the entire weave could be woven on 8 harness as follows: Section A: 1, 2, 1, 2, 1, 3, 4, 3, 4, 3, twice repeated. Section or square B: 5, 6, 5, 6, 5, 7, 8, 7, 8, 7, twice repeated. The sample at Fig. 5, illustrates this method of ornamentation quite clearly, with the further introduction of a lappet figure in the ground work between the squares. The weave used in this case is the 5 and 1 mock leno.

Notes on Slubbing Frames.

A recent writer in an Indian textile journal, which has been discussing modern mill machinery and proper use to get best results, speaks interestingly on the subject of slubbing frames, and some of his remarks are appended.

The substitution of aluminum for steel for the flyers of preparatory frames should meet with a warm welcome if it be demonstrated that the new metal will stand the wear and tear. One would think that the part which fits on the spindle would require bushing. The extreme lightness of the metal compared with steel, being as it is, 2.6 to 8, combined with its freedom from rust, should go a long way in its favor. At present the price asked by a firm trying to introduce them is almost prohibitive, but the objection of cost may vanish as the demand increases, and the methods of manufacture are simplified. With the adoption of aluminum the difficulty of arriving at a perfect balance should be greatly reduced, especially if the presser also is made of this metal, or it might be more correct to say that a perfect balance, when the spindle would have such a light load to carry, might not be such an absolute necessity. The presser is, without doubt, the portion of the flyer which causes (since double pressers went out of use) some little trouble as to balancing to most makers, and a great deal to some.

The difficulty arising, as it does, from the use of a single presser, should not be insurmountable; indeed, one or two makers have proved that it is not. By properly proportioning the pressers, for it is here where the secret would seem to lie, they arrive at a practically perfect balance. The baleful influence of an imperfectly balanced flyer cannot easily be over-estimated, ruining, as it does, the spindle in a very short time, and setting up vibration, which is detrimental to the whole machine.

The spiral slit down the hollow leg, introduced by Mason, has been almost universally adopted, as with it the end can be run slacker, without danger of flying out of its place, than it can with the slit running from top to bottom straight.

The slot by which the sliver enters the presser-eye, when made horizontal instead of vertical, is much more convenient and handy. If the thread be left out after doffing, it immediately goes to its place on the starting up of the machine. Care should be taken, however, that the point which forms the top part of the slot should have no inclination, for where the frames are made with the bobbin leading, there is a tendency for the sliver to hook on it, and the bobbin is spoiled. A slightly outward turn would take away the possibility of such a thing occurring.

Yarns and slivers should go as near to a straight line from one point to another as the circumstances of the case

will admit. This truth is demonstrated over and over again by those whose business is the handling of very fine yarns; hence, the presser below the flyer is much to be preferred to the one over it. In the former the angle at which the sliver leaves the hollow leg to go towards the presser-eye is very gentle, while that of the "presser above flyer" is most abrupt, something like the letter V. In this connection may be mentioned the necessity of periodically cleaning the slit at the top of the spindles, a duty too often neglected, with the result that the flyers cannot fall in their proper places, and act in such a position quite as injuriously as an unbalanced flyer would.

The bobbins of fly frames form no inconsiderable item in the working expenses of a mill; consequently, they have always been, to the ingenious, things of constant interest. Almost all materials have been pressed into this service with the object of supplanting the old wooden tube. Paper, compressed or pasted in layers, so far, has not been a success, the latter failing, perhaps, because of its lightness, and both styles having the great drawback of requiring wooden bushes at both ends, which by the constant taking off and putting on become loosened and forced from their places. Tin had also the objection of wooden bushes, along with the additional one of being easily dented by a fall or a knock of any kind. Taking everything into consideration, however, paper seems to be the most promising of all materials, when used in the compressed form, as it will stand a good deal of knocking about without damage, and would not be affected, except in the slightest manner, by climatic changes—extremes in dryness or moisture—and it only requires some one with a practical knowlege of what are really the requirements to make the small alteration which would make it a success from every point of view; but up to date it may be confidently asserted that for the purpose we have had nothing to beat wood.

For the strengthening of the wooden tubes, shields are of the greatest utility, and of these the styles and makes are legion—yet we have to congratulate one of our citizens on the happy thought of corrugating these shields, and by this means lessening their liabilily to come away from the bobbins, as the grip on the wood is very much increased.

On slubbing and intermediate bobbins, if the top shields are larger on their outside diameter than the bobbin, they are a hindrance, and should be dispensed with. This will facilitate the removal of the residuum of sliver when replacing an almost empty bobbin by a full one, the tenter being enabled to slide it off instead of having to unwind it.

Because the absence of such a shield, as has been described, makes it easy to remove the sliver, it should always be present on a roving bobbin, as the spinner is deterred from taking out a bobbin with one or two layers on, owing to difficulty in cleaning the bobbin, and he finds it easier to allow the bobbin to run almost out, and what would otherwise be converted into waste, is spun into yarn.

The jamming of the spindle in the collar generally takes place after the frame has been doffed, and is caused by an accumulation of fly, which may come from the inside of the bobbin on to the top portion of the spindle during the time the rail has been working at its shortest traverse, and as after doffing it goes at once to its longest traverse, the accumulation is carried into the top of collar by the spindle, and the latter gets jammed as soon as the rail begins its ascent. This is not so serious as jamming on the downward course, as very often the result in that case is the breaking off of the leg which carries the collar.

Water in Finishing Cotton Cloths.

Many finishers have the belief that beyond serving as a convenient vehicle for carrying the various sizing materials to the cloth, water plays no part in the process of finishing cotton cloth. This, however, is by no means the case, for experience shows that the water used in the process does exercise some influence on the operation, and affects the results. Cases are known of finishers who have been successful as regards the character of the finishes they have produced at one works, going to another works and there being unsuccessful, although using the same materials and similar machines, the difference being due to the different character of the water used in the process at the two works. It will therefore not be uninteresting if a few remarks be made as to the influence of water in the finishing of cotton cloths.

If the water used were pure, says a writer in the Textile Mercury of England, the finisher would have little trouble. Unfortunately the finisher cannot obtain pure water to work with, as all natural waters contain some substances in solution, mineral and organic, more or less according to circumstances, the amount varying very considerably from perhaps as little as 3 grains of solid matter per gallon, to as much as 200 grains, the latter being very impure water. The substances which may be present comprise sodium chloride (common salt), sodium sulphate, potassium chloride, and other alkaline salts, calcium carbonate, calcium sulphate, iron oxide, magnesium carbonate, magnesium sulphate, magnesium chloride and silica, with vegetable and animal organic matters.

We may regard the water from several points of view: First, its influence as water; second, of the matters it contains on the finishing of the cloths; and third, the influence of the impurities present in it on the materials used in finishing.

Water has some action on cotton. It penetrates into the pores of the fibre, causing it to swell and become more porous and therefore better able to absorb any finishing agent which may be presented to it. Again, by opening out the fibres it gives the latter a better chance of shrinking, and every finisher knows that he has to guard against the shrinking of the cloths he has to deal with. This is remedied by keeping the cloths in a state of tension as they are passing through the various machines. The tendency to shrink is greater with hot water than with cold water. In some kinds of finishes, those known as "shrunk" finishes, this action of water is taken advantage of, and the cloths are run through the hot water, which heightens the effect, then through the necessary machines, care being taken not to have too much tension on the cloths in so doing. Cloths finished in this way are somewhat narrower and shorter than when in the grey condition, but they are thicker and fuller in the feel, which compensates for the difference in length and width.

Next there is to be considered the influence of the various substances or impurities present in the water on the finishing of the cloths. It is to be remembered that the fabric in its passage through the water takes up some of the latter, the quantity varying in amount; but a cloth will under ordinary conditions absorb fully its own weight of water. Thus a piece of cloth weighing 40 pounds will take up 4 gallons of water. Now in the process of drying, etc., while the water will evaporate away, the solids it contains in solution will remain behind, and if the water contains 50 grains per gallon, then it follows that nearly one-half ounce of matter will be deposited on the cloth; while if the water contain 100 grains per gallon, it will have nearly one ounce of solid matter deposited thereon. It is found that the cloths are rendered stiffer and harsher to the feel, much more so than if purer water were used.

Sometimes this is not desired, and therefore for soft finishes as pure a water as possible must be used (and it is to be noted that some works cannot produce soft finished cloths on account of the hardness of the water they use). When a finisher desires to build a works he ought to pay some attention to his water supply, and to locate them where he can get good soft water. It may be noted here that waters which contain much lime, etc., have a property which is called "hardness," and expresses the effect which is met with when they are used for washing.

The third point to be considered is the influence which the impurities contained in the water have on the materials used in the finishfng process. These comprise such substances as tallow, wax, soap, soluble oil, mineral, barytes, chlorides of calcium, magnesium and zinc, starch, flour, glycerine, glucose, etc. On the majority of these the impurities have no action whatever, that is, if the water does not contain anything out of the ordinary. Perhaps the materials on which the impurities have most action are the soap and soluble oil. Soap is, as is well known, a compound of fatty matter and alkali, and when a solution of soap is added to one of a calcium or magnesium compound, then white curdy masses of a lime or magnesium soap are obtained, owing to the fact that the lime or magnesia displaces the alkali of the soap and forms thereby an insoluble lime or magnesia soap, thus destroying or neutralizing the latter. This effect is also obtained when soap is added to a limey, or in other words, hard water, and in using soap to produce any given effect this action must be taken into account, and more or less soap be used according to the hardness of the water.

Then there is another effect: these curdy masses of lime or magnesia soap will get on the cloth and give it a greasy feel, or sometimes, if they be not deposited evenly, a spotted effect. Now it happens that a very small quantity of lime or magnesia in a water will neutralize or destroy a large amount of soap. Thus, supposing a water contains 35 grains of lime compounds per gallon (and such water is commonly met with) then 1 gallon of such water will destroy 340 grains of an ordinary soap, and 1000 gallons of this water, as much as 48 lb.of soap. It is therefore obvious that a hard water is a costly one to work with, because the finisher is compelled to use more soap with such than with a soft water. Soluble oils and oleines being also preparations containing fatty matters and an alkali, give practically the same effects as soaps. It would be worth the while of any finisher who is compelled by force of circumstances to use hard waters to adopt some system of softening them. There are many such, and some work very well and are economical in cost, while they effect a saving over and above their cost in various ways.

When such substances as Glauber's salt, nitre cake, soda crystals, pearl ash, etc., are used in the preparation of the finishing sizes, these, reacting with the lime in the water, cause the formation of the sulphate or the formation of carbonate of lime, as the case may be. This tends to take away from the crispness of feel which it is intended to produce when such substances are used, while the lime tends to make the cloths somewhat powdery. It is necessary, in such cases, to employ rather more of these substances to produce the desired effect than when soft water can be employed.

Irish Moss for Sizing and Finishing.

This article, variously called Iceland moss, carrageen, carraigeen, carraghen, and pearl moss, is the seaweed *chondrus cripsus*. Its good qualities in the industrial, and especially in the textile, arts are hardly sufficiently appreciated. The plant grows along the rocky coasts

of Europe, and is found from Gibraltar to the North Cape. It does not seem to have been able to penetrate into the Mediterranean, and is only rarely found in the Baltic. It is moderately abundant on the west and north-west coasts of Ireland, and its collection forms one of Ireland's minor industries. On the east coast of North America it is abundant, and the principal supply comes from those shores. The crop in many places is unfitted for use to a great extent owing to its being infested with mussels and minute shellfish.

The harvest of mercantile moss is therefore confined to and obtained from the rocky shore of the Minot Ledge, which is in Plymouth county, state of Massachusetts. In this locality moss-gathering forms a considerable and distinct industry. The gathering begins late in the springtide of the full moon in May, and continues till early in September. Prior to the commencement of the gathering, bleaching beds are prepared by raking the stones off sandy plots on the beach. The collectors then go out to the rocks in boats, in order to be on the spot when the tide is at its ebb. The spring tides are chosen because of their ebbs leaving bare the most considerable extent of the rocks. The best quality, intended for the supply of druggists, is hand-pulled in order to secure its freedom from shells and tape grass, and is worth twice or thrice the value of the bulk of the crop.

During the neap tides, when the rocks remain covered, the moss is gathered or dredged by means of a long-handled iron rake, as mussels are often dredged from the channels of our rivers. This part of the harvest is, of course, not so good as the other, containing, as it does, other varieties of weeds and different species of mollusca. It is not, however, rendered unsuitable for sizing purposes. The moss, both hand-pulled and dredged, is laid upon the bleaching beds and exposed to the air and sunlight, which renders it white and clear. During this time it is washed in sea water half-a-dozen times or more. Rain seriously injures its quality when thus exposed, as it rapidly dissolves in fresh water. The second quality is largely used by brewers for fining beer. It is also used with the lower qualities, for sizing cotton goods and for paper sizes, and the rougher qualities for stuffing mattresses, furniture and similar uses.

The mercantile product is foilaceous, crisp, whitish, odorless, tasteless, and mucilaginous, and a strong decoction gelatinizes on cooling. It possesses adhesive and stiffening powers, and dries down on the fibre, which it will not injure, nor will it change sensitive colors.

We see no reason why this material as a home product should not be more extensively used in the sizing and finishing of colored goods than it is at present. It has strong stiffening properties; it is odorless, tasteless, harmless, and cheap—a combination of merits not often found, and that should secure for it the attention and consideration of users of vegetable and animal sizes for manufacturing or finishing purposes.—[Exchange.

Estimating the Amount of Contraction in Cotton Fabrics.

The short article in the August number on the "take up in weaving" is on an important subject which students of weaving generally find a huge stumbling block, retarding their progress along this line. In this article, practical experience is "the" guide to a thorough knowledge of how to get the per cent. to be allowed about right, but this does not answer the needs of the student, who asks himself "how am I to get this experience?" Is there no basis from which one can get fairly accurate results, or must he blindly experiment and learn through the medium of his mistakes?

It is purposed to enlarge somewhat upon this subject and offer a few suggestions which, if properly understood,

may prove helpful, for with cotton fabrics there are methods of working from which a good basis or starting point can be established, and this is what it will be endeavored to make clear.

It is often said that there is no rule for estimating the amount of contraction to be allowed when weaving textiles. This is correct in regard to woolens, but not as to cotton fabrics, for when making a well-balanced or perfect cotton cloth of any count, there is a rule, if the fabric be woven under proper conditions. It is when there is a wide difference between sley and pick, and the yarns are out of proportion to the counts used, that the value of keeping correct data of how the various constructions come out, etc., is most appreciated.

Take, for example, the amount of contraction between reed and cloth. We know that theory teaches and practical experience demonstrates the fact that the higher the counts used with a stated number of yarn, the less will be the amount of contraction, and vice versa. Hence the statement made in a former article that the common practice of allowing two dents per inch cannot be correct in all cases. We find that the sliding scale of sley, $1 \div 2 \times 95\% =$ dents per inch in reed required, gives more accurate results.

Contraction in fabrics may be said to be of two kinds: 1st, normal or reciprocal shrinkage, which embraces those cloths in which the warp and filling threads are bent about equally out of the straight line. 2d, one-sided or abnormal shrinkage, which is found in fabrics where one set of threads lies practically in a straight line, the other system doing all the bending. A good example of this class is found in the dimity stripes which have been manufactured so extensively of late. Where the dimity cord consists of four or five threads, it is necessary to use two beams, otherwise the cord will keep running in the cloth in "kinks"; the filling yarn being so much finer than the cord, it is compelled to do all the bending at this point, the ground threads doing their proportionate share of bending with the filling, making the cords run slack, and "kinks" are the result. Hence the necessity of maintaining two tensions between the ground and cords, by running each on a separate beam.

A common rule in use for estimating the amount of shrinkage in normal cloths is as follows:

To estimate shrinkage of warp: Multiply picks per inch by 3 and divide by the counts of filling; or, what is practically the same thing: Multiply picks per quarter inch by 12, and divide by the counts of filling.

To find the filling shrinkage, substitute threads for picks, and counts of warp for the filling, thus: Multiply threads per quarter inch by 12, and divide by the counts of warp.

Example: Find the amount of warp and filling contraction in the following cloth. 64×68, 40s warp, 42s filling.

$$\begin{array}{r} 16 \\ 12 \\ \hline 40\overline{)192}\,(4.8 = 4\tfrac{4}{5}\,\%\ \text{filling} \\ 160 \\ \hline 320 \\ 320 \end{array}$$

$$\begin{array}{r} 17 \\ 12 \\ \hline 42\overline{)204}\,(4.85 = 4.85\,\%\ \text{warp.} \\ 168 \\ \hline 360 \\ 336 \\ \hline 240 \end{array}$$

This method is approximately correct to about 80 sley and pick and 45s yarn; for higher counts the multiplier 13 is used to better advantage.

Another method of working which has been found useful for normal fabrics is the following:

To estimate per cent. of warp contraction: Multiply the picks per quarter inch, squared, by 0.567, and divide by the counts of filling.

To find the amount of filling shrinkage: Multiply the threads per quarter inch, squared, by 0.567, and divide by the counts of warp.

Example: Find the amount of con-

traction in a cloth 96×100, 65s warp, 70s filling.

$$\frac{25 \times 25 \times 0.567}{70} = 5.062\% \text{ for warp.}$$

$$\frac{24 \times 24 \times 0.567}{65} = 5.024\% \text{ for filling.}$$

To calculate the per cent. of shrinkage in abnormal fabrics, we have the following rule or basis:

Threads per quarter inch, squared, and multiplied by 0.567, divided by a number equivalent to the sum of the diameters of the yarns used in the cloth.

The following example will illustrate this method of calculation.

Required: The amount of warp shrinkage in the following cloth: 128 threads per inch, 64 picks, 42s warp, 20s filling.

The diameter of a 42s thread is $\frac{1}{170}$ of 1 inch; a 20s thread has a diameter of $\frac{1}{118}$ of 1 inch. $\frac{1}{170}+\frac{1}{118}=\frac{1}{69}$, practically, and we find that this diameter of a thread is equivalent to number 7s yarn, so that the formula would be:

$$\frac{16 \times 16 \times 0.567}{7} = 20.736\% \text{ for warp.}$$

When figuring for take up, when heavy cords are used, such as leno or lappett figures, a good method of arriving at the exact length is to take out one of the threads and find the difference in length by actual measurement. The per cent. can then be added to the number of threads used. TEXTILE.

Cotton Yarn Manufacturers Favor Further Curtailment.

About a dozen cotton yarn manufacturers, representing Boston, Providence, Fall River, and other New England cities, gathered at the Narragansett Hotel, Providence, September 1st. A month ago a similar meeting was held in Providence, when the present condition of business and outlook for the immediate future were discussed. The report then presented corroborated the prevalent belief that there was an overproduction of fine yarns. The amount of goods turned out was far in excess of the demand, as many knitters and weavers who usually procure yarns of yarn manufacturers were shut down. Resolutions were passed favoring a curtailment of production to the extent of 50 per cent.

The meeting of September 1st was held to ascertain the views of manufacturers as to the advisability of ordering further curtailment. Among those present were B. F. G. Linnell, of the Green & Daniels Mfg. Co., Pawtucket; J. F. Adams, Adamsdale, Mass.; George P. Grant, treasurer Grant Yarn Co., Fitchburg; A. B. Sanford, treasurer Globe Yarn Mills, Fall River; Arthur H. Mason, treasurer Sanford Spinning Co., Fall River; I. C. Davis, secretary Kerr Thread Co., Fall River; C. L. Macomber, agent of the Nemasket Mills, Taunton; A. L. James, treasurer of the Elizabeth Mills, Providence; Floyd Cranska, Moosup, Conn. Letters favoring radical curtailment of production, from prominent manufacturers in Maine, Pennsylvania and New York State were read.

I. C. Davis presided. The discussion over, a committee was appointed to draft resolutions favoring a further curtailment during the month of September. The resolutions moved by Mr. Sanford were as follows:

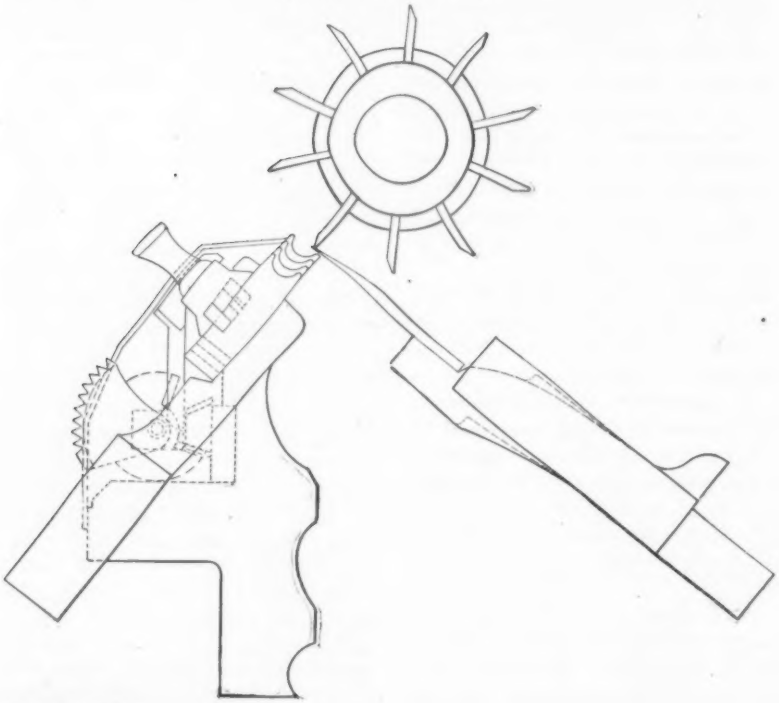
"That the benefits aready accrued to the yarn industry by the curtailment of production during August, have been so marked that it was decided by those present to continue the curtailment by at least 50 per cent. of the ordinary production, for the month of September, in order to further decrease the stocks on hand (already considerably reduced), thereby placing the industry in a healthier condition.

"We therefore recommend that all cotton yarn spinners co-operate in further curtailment during September, each individual or corporation choosing its own way of reducing its output."

These resolutions were unanimously adopted. It was stated during the meeting that this method of reducing stock has had an excellent effect upon the industry, and is favored generally by the customers of the cotton yarn spinners. One effect has been to steady prices.

New Shear Rest.

(PATENT PENDING.)



SAVES

KNOT HOLES
FLOCK HOLES AND
THE LIST
ALL AT THE SAME TIME.

CAN BE APPLIED TO ANY OF OUR SHEARS WITH LITTLE EXPENSE.

Owned, Manufactured, and Sold Exclusively by

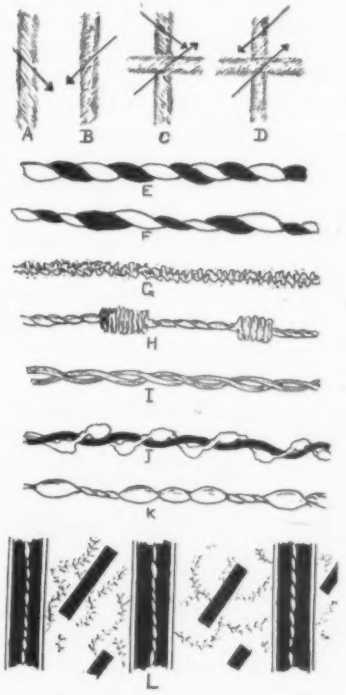
Parks & Woolson Machine Co.

SPRINGFIELD. VERMONT.

WOOLEN DEPARTMENT.

Yarns, Fancy Twists and Combinations.

Of the several types of yarns and fancy twist threads now in use for making woolen, worsted and kindred goods, but two are entirely new, the rest having either been in common usage for years, or are simply new forms of combinations. Of the new styles, two are designated in the cut *G* and *J*. The first is



an 1896 invention, while the latter is last year's.

Of the ordinary styles of yarns in standard usage, the regular left twist thread is designated *A* in the diagram; *B* is the right twist thread, the arrow showing the direction of the turns developed in twisting. A variety of results is obtained by merely adopting the two styles of twist. When combined as warp and filling, an opposing union results when a left twist filling crosses a left twist warp, as shown in *C*. A finer texture is produced, and a generally firmer fabric, when the filling yarns are of one twist and the warp another, as in specimen *D*, in which a left twist filling interlocks with a right twist warp thread. Thus, two varieties of fabrics are produced by merely using yarns of different twist.

The black and white twist strand in *E* is a common type, and made in various ways, the most popular being by twisting a black and a white thread together on the twisting frame. A unique effect results from rigging up a frame on the mule, in which is suspended a spool of white roving above a black one, the two ends being run together and twisted during spinning.

The cloudy effect produced in the thread *F* makes this type of yarn useful for certain kinds of fancy shawls, suitings, etc. The alternate variations in the diameter of the strand are easily obtained in a mill which is equipped with a mule fitted with a regular intermittent motion on its drawing rollers; but in mills not so supplied, the work is more difficult. It can be done on the cards by putting a stop-motion gear on the end of each doffer, which will permit the small part of the roving to deliver regularly, and upon stopping momentarily, will allow enough extra roving to accumulate to make the clouds uniform.

The type of yarn shown in sample *G* is quite new to the textile trade, having been brought out this season by an inventor who has devised a system of

spinning on new lines. The parallel arrangement of the fibres, which has been the common law of spinning in the past, is not observed in twisting the new yarns; in fact, a new law is followed, in which the process consists in making a miscellaneous collection of fibres in a straight line, each entirely independent of the other, so far as order is concerned. Yet there is method in this jumble of fibre, and when twisted, a peculiar thread is made that is novel and adaptable for use in quite a large range of goods.

The knopped style illustrated in *H* is familiar, and is made by forming buttons or knops at uniform distances along the line of the thread on the regular automatic knopper. When made of contrasting colors, some striking patterns can be woven in woolen and worsted lines with this kind of yarn.

A diamond twist effect is shown in sample *I*. This is a common style and is sometimes called the chain twist, being formed, ordinarily, of three strands, but in this case of two strands. It can be manufactured in several ways; one consists of twisting the strands on a mule, in which there is a quick delivery, thus enabling the yarns to form loosely and open, as in illustration, for tight yarns would not show any development of the diamond effect.

The combination shown in *J* is practically new, from the fact that the extra white strand is lumped in a peculiar way. It is made by fixing an intermittent motion on the ring doffers of the cards, resulting in the making of lumps at regular intervals. Then the strand is twisted on the mule, and but little twist put in, just enough to close up the fibres between the lumps. This strand is then twisted about a black or any color yarn, and the combination produced as required.

Specimen *K* is a knopped twist production, made by alternate intermittent motions on the rings of the card. A special cog is required to do the work, as the knops are grouped as shown.

The sample *L* is shown to indicate the character of patterns in which yarns of the nature of the above may be used with attractive results.

The coming season is to be characterized by the demand for novelties in the line of cycle suitings and general sporting goods. This is already indicated by the demand for cloth for use in making bicycle suits. This is a new and large field opening for the use of fancy yarns and odd combinations, for the cycle rider and the golf player invariably purchase suitings in which the pattern is attractive, and the texture soft and pleasing to the feel. The pattern plates brought out by New York and other manufacturers of these suits, are good examples of what will be required on the part of the cloth manufacturer. The designs are attractively set with fancy yarns of many colors, the finish is soft, the fabric generally light and firmly woven, elastic, and adaptable to outdoor exercises.

The mills made more cycle suiting last year than the year before, and this year they will make a proportionate increase. This is bringing into use many styles of yarns for which there was but little use five years ago.

Points on Finishing Woolens.

There are several considerations to observe in connection with the proper finishing of woolen goods. The first is at the time when the goods come into the finishing department, and is burling, which is the first operation. To successfully do the work at this point, good burlers, proper materials and the right kind of a burling stand are required. A careful and well trained burler is worth considerable in any finishing room, as she will locate many imperfections and rectify those within her line. She will carefully remove all bunches, lumps, snarls of threads, filling run in at sides, etc. Usually she gets 75 cents a day, but it would pay to give higher pay and obtain the high-

est skill. The burling board is no place for cheap and shiftless hands.

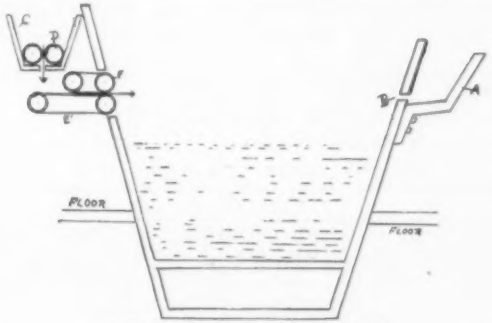
Next, furnish good materials to work with. A home-made, dull, clap-trap of a burling iron will produce more rips and rough edges than would pay for a gross of manufactured irons. Fit up a slanting table with a smoothly covered tin or zinc top, and place it near a window. Burling should not be done on a level, rough table. Make the slant about 45 degrees.

Next, the sewers will close up all holes, floats, etc.

In some instances it is found advantageous to scour the goods before fulling. Conditions will of course tend to govern this. Sometimes men who have been in the habit for years of scouring after fulling, have changed about and scoured before fulling.

Four matters may be considered in fulling ordinary woolens and worsteds: application of the soap, applying the flocks, even fulling, general troubles. As regards the applying of the soaps in the fulling mill, it may be mentioned that there are several very good automatic devices on the market that do the work correctly and thoroughly. For the benefit of those who may have no such mechanical attachments on their mills, and who may desire to try an automatic feeding arrangement, the accompanying drawing of a section of a fulling mill is given, showing the manner of rigging up and attaching an unpatented contrivance which any mill man can make and use. A slot should be cut in the rear of the mill its entire width, and about half an inch wide, as indicated at *B*. Then nail up a box-like device, *A*, and put the soap into that. The jar of the mill and the rubbing of the goods against the crevice will draw the soap through the slot and distribute it regularly over the goods. Hot or cold soaps thrown into a mill upon the goods frequently destroys the color and feel of the fabric.

The process of flocking goods is neatly and effectually done by the use of a rigging, like that shown, placed at the other side of the mill. The goods



AUTOMATIC FEEDING DEVICE.

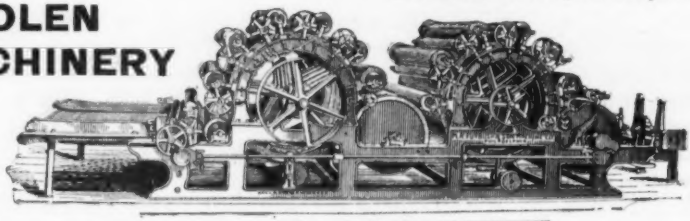
should be tacked to keep the flocks from the face. Automatic flocking devices work well as a rule, but for ordinary purposes, the fuller will find that a contrivance fixed up in the manner indicated will answer all purposes. A slot about four inches wide must be cut into the front of the mill and bearings for the rollers arranged. The box *C* is nailed or screwed up and the flocks introduced into this box, from whence they are carried between the turning rolls, *D*, down to the apron, *E*. The latter revolves over the rolls as shown. Another leather apron, *F*, runs over the top rolls, thus carrying the flocks along and depositing them into the mill through the slot. The rolls are the width of the mill. They can be made of wood. A pulley at the end of each will serve all

M. A. FURBUSH & SON MACHINE CO.

MANUFACTURERS OF . . .

224 Market Street, Philadelphia.

WOOLEN MACHINERY



WRITE FOR NEW CATALOGUE.

WORSTED CARD No. 46.

THE American Napping Machine Co.,

Owns the Principal Patents

on Napping Machines, representing the latest French, English and American Patents.

Machines on exhibition and samples napped on application to any of the following offices:

DAVIS & FURBER MACHINE CO., Builders and Selling Agents, North Andover, Mass.

GEO. S. HARWOOD & SON, 7 Water Street, Boston.

C. J. JONES, Salesman, Mascher Street abv. Lehigh Avenue, Philadelphia.

H. H. HEAP, Treasurer and General Manager, Williamstown, Mass.

FAIRMOUNT MACHINE CO.

22ND & WOOD STS. PHILADELPHIA.

THE LATEST AND BEST LOOMS AND HARNESS MOTIONS

BEAMING, SPOOLING, WINDING, DYEING, AND SIZING MACHINERY.

POWER TRANSMITTING MACHINERY.

THOS. C. KELLOGG,

SKANEATELES, N. Y.

Dealer in and Grower of

TEASELS.

Clipped and packed to any desired size.

Teasels are grown, cured and packed on own premises.

New York Office, 96 & 98 Reade St.

A. H. KELLOGG, Manager.

Correspondence solicited. Samples free sent by mail upon application. Write for Price List No. 82.

McLAUGHLIN BROS.,

TEASELS,

SKANEATELES FALLS, N. Y.

Offer the best quality medium sizes, most evenly assorted, at the lowest prices in the market. Satisfaction guaranteed. Business established in 1832.

WM. W. KELLOGG,

SKANEATELES, N. Y.

AMERICAN TEASELS

High Grades a specialty.

Sample Orders Solicited.

purposes for driving with a belt. The object of running the flocks through revolving leather aprons is to not only carry the flocks into the machine uniformly, but to roll out lumps and effect an even distribution. Like the soap box, this idea is free for any to use.

Uneven fulling results from excessive heating, rolling of the goods, loosely adjusted box journals, flapping driving belt, uneven or worn rolls, irregular tacking, inferior fulling soaps or weak ingredients which do not act regularly.

General troubles in the line of defects may arise outside of the fulling department, and consist of unequally spun yarns, irregular twists in the warp or filling threads, tight or loose sections in warping, uneven weaving, poorly or improperly mixed stocks; and sometimes, when the backing yarns in goods differ from the face, there is considerable trouble with the goods in the fulling mill, and only very close attention and skillful work will bring the fabric out right. Colors will run, especially the reds, if the soaps are too strong or if the water is applied at too high temperature. It the colors are simply deadened, they may be brought back by putting a little sulphuric acid into the mill, and running the goods through some of this acid in clear water. Whiz the goods as soon as possible after removing from the scouring, for if hung upon a rack the suds are liable to drip toward the bottom folds and darken the colors. Use fairly good soaps and compounds in both fulling and scouring, give close attention to the work, and there will not be much trouble in getting the goods off satisfactorily.

Chalk Talk.

CALCULATING THE AMOUNT OF YARN REQUIRED FOR A LOT, AND COST OF SAME.

[With Plate.]

In the manufacture of cloth, it is often necessary to calculate the exact amount of yarn required for a large number of pieces, and the cost of same.

This fabric used as an illustration, is worsted dress goods. It is 40 inches and has 60 ends in each inch, and has a selvege half an inch wide on each side.

The dressing of the warp is as follows:

6 ends 2/50s white worsted.
6 " 2/20s black worsted.
6 " 2/30s light brown worsted
2 " 2/28s green worsted.

This make 20 ends in each repeat of the pattern.

The warp is dressed 60 ends to the inch for 40 inches, and 40×60 equals 2400 ends in the warp. It is necessary to find the number of ends of each size and color of yarn in the warp. As the pattern repeats on every 20 ends, to find the number of ends of each kind, divide 2400 total number of ends in the warp by 20, number of ends in each repeat, which gives 120 repeats in the warp.

To find total number of ends of each size and color in the warp, multiply the number of ends of each kind in each repeat, by the number of repeats in the warp. There is in the warp 120 repeats of the pattern, in each pattern there is 6 ends of 2/50s white; this multiplied by 120, gives 720 ends of white.

The warp takes up 4 per cent. in weaving, and as each end in the finished yarn is only 96 per cent. of its original length, they must be dressed longer in order to be the required length when woven. To find what the full length is, divide 36 by .96, which gives as a dividend 37.5, which is the length the ends must be dressed to produce a yard woven. There are 720 ends of 2/50s white and as each end must be dressed 37.5 inches in length; to find the total number of yards required of 2/50s white, multiply 720 total ends by 37.5 inches length of each, which gives 27,000 inches $\div$ 36 inches, to reduce to yards, gives 750 yards 2/50s.

TO CALCULATE COST OF YARN FOR 50 PCS DRESS GOODS 40 YARDS EACH

40 INCHES WIDE – 60 ENDS PER INCH – 1 INCH SELVEGE

TAKE UP 4% IN WEAVING – 2460 ENDS IN WARP.

		WARP	ENDS		
6 ENDS	2-50's	WHITE x 120 REPEATS	= 720 = 750 YDS =	.857 ozs	
6 "	2-20's	BLACK x 120 "	= 720 = 750 " =	2.00 "	
6 "	2-30's	BROWN x 120 "	= 720 = 750 " =	1.42 "	
2 "	2-28's	GREEN x 120 "	= 240 = 250 " =	.51 "	
60 "	2-22's	WHITE SELVEGE.	= 60 = 62 " =	.15 "	
				4.937 "	

2160 PICKS IN A YARD – FILLING – 60 PICKS PER INCH.

			PICKS		
6 PICKS	2-50's	WHITE x 108 REPEATS	= 648 = 738 YDS =	.84 ozs	
6 "	2-20's	BLACK x 108 "	= 648 = 738 " =	2.10 "	
6 "	2-30's	BROWN x 108 "	= 648 = 738 " =	1.40 "	
2 "	2-28's	GREEN x 108 "	= 216 = 246 " =	.63 "	
				4.97 "	

	WARP		FILLING		
2-50's WHITE =	.857 ozs	+	.84 oz =	1.697 ozs	
2-20's BLACK =	2.00 "	+	2.10 " =	4.10 "	
2-30's BROWN =	1.42 "	+	1.40 " =	2.82 "	
2-28's GREEN =	.51 "	+	.63 " =	1.14 "	
2-22's WHITE =	.15 "		=	.15 "	
	4.937 "		4.97 "	9.907 "	

2-50's WHITE	1.697 ozs x 2000	= 3394 OR	212 lbs 2 ozs	
2-20's BLACK	4.10 " x "	= 8200 "	515 "	
2-30's BROWN	2.82 " x "	= 5640 "	352 " 8 "	
2-28's GREEN	1.14 " x "	= 2280 "	142 " 8 "	
2-22's WHITE	.15 " x "	= 300 "	18 " 12 "	

212 lbs 2 ozs	2-50's @ .75 A lb =	#	159.11
515 "	2-20's " .50 " " =		257.50
352 " 8 "	2-30's " .55 " " =		193.88
142 " 8 "	2-28's " .48 " " =		65.40
18 " 12 "	2-22's " .47 " " =		8.81
	COST OF YARN FOR 2000 YARDS CLOTH	#	687.70

2000) 687.70 (.34 COST OF YARN FOR ONE YARD

CALCULATING THE AMOUNT OF YARN REQUIRED FOR A PIECE AND COST OF SAME

There is of 2/20s black and 2/30s light brown, the same number of ends as of white, and as the take-up is the same there will be of each of these 750 yards required. The 2/28s green has only 240 ends in each yard, and to find length required of these, multiply 240×37.5=9000 inches, divided by 36 equals 250 yards required.

The selvege consists of 60 ends white 2/22s, each end 37.5 inches long, gives 60×37.5=2250 inches, divided by 36 equals 62.5 yards required.

The next step is to reduce the number of yards of each size of yarn to its weight. 750 yards 2/50s white is the first item, and to find what this weighs it is first necessary to obtain the number of yards in a pound of 2/50s, which is 560×25=14,000 yards, divide this 16 (ounces in one pound), and 875 will be the number of yards in an ounce.

To find the weight of 750 yards, divide by 875 which will give .857 ounces of white 2/50s. The same method is pursued in finding the weight of all the other sizes of yarn used.

The second item 2/20s black, is also 750 yards, but being a larger count the weight will be different.

2/20s equals single 10s or 5600 yards to a pound, divided by 16; gives 350 yards in one ounce.

750 yards divided by 350, gives 2 ounces of 2/20s black.

750 yards 2/30s weighs 1.42 ounces.

2/30s equals single 15s, multiplied by 560 and then divided by 16, gives 525 yards in an ounce. 750÷525=1.42 ounces.

The 2/28s is equal to single 14s, so 14×560=7840÷16=490 yards in one ounce.

250 yards 2/28s divided by 490 equals .51 ounces.

2/22s equals single 11s with 6160 yards in one pound, divided by 16 equals 385 yards, one ounce. 62.5÷385=.15 ounces 2/22s.

The weight of the different sizes of yarn in the warp, has been computed and the filling is next taken under consideration; in this instance the dressing is the same as in the warp. There are in the filling 60 picks in every inch, and in one yard there will be 2160 picks. In each repeat of the pattern 20 picks are used, and the total number of repeats is 2160÷20, or 108 repeats. With 6 picks white in each repeat, 108 repeats of pattern gives 648 picks white.

Six picks, 2/20s black, and 108 repeats gives 648 picks black.

Six picks, 2/30s light brown, and 108 repeats gives 648 picks light brown.

Two picks, 2/28s green, and 108 repeats gives 216 picks green.

The cloth is 40 inches wide and with one-half-inch for selvege on each side, each pick will be 41 inches in length.

There are 648 picks of 2/50s white, 2/20s black and 2/30s light brown, each one of which is 41 inches long, so 648×41=26,568 inches, divided by 36, gives 738 yards of each. 216 picks, 2/28s green, multiplied by 41=8856 inches, divided by 36, gives 246 yards green.

The next step is to find what these yardages weigh, and the same method is pursued as in the warp.

875 yards in one ounce 2/50s, divided into 738 yards, gives the weight of this number of yards as .84 ounces.

350 yards in one ounce of 2/20s, divided into 738 yards, make weight 2.10 ounces.

525 yards in one ounce of 2/30s divided into 738 yards, equals 1.4 ounces.

385 yards, one ounce 2/28s, divided into 246 yards, equals 63 ounces weight.

The next step is to add together the weights of the same yarn as were used in warps and filling. This is done in the illustration, and the various yarns are shown, which are as follows: White, 2/50s, 1.697 ounces in one yard; black, 2/20s, 4.10 ounces; 2/30s, light brown, 2.82 ounces; 2/28s, green, 1.14 ounces.

These are the amounts used in one yard and to produce 2000 yards, just 2000 times this weight will be required, so these weights are multiplied by 2000 and divided by 16 to reduce to pounds.

212 pounds, 2 ounces of 2/50s, at 75 cents a pound equals $159.11 cost of yarn.

515 pounds, 2/20s, at 50 cents, equals $257.50 cost of black.

352 pounds, 8 ounces 2/30s, at 55 cents, equals $193.88.

142 pounds, 8 ounces 2/28s, at 48 cents, equals $68.40.

18 pounds, 12 ounces 2/22s white, at 47 cents, equals $8.81.

By adding all these items of cost of yarn together, it will be found that $687.70 is the cost of yarn for 2000 yards of this fabric.

Two Insurance Lessons.

President Atkinson of the Boston Manufacturers' Mutual Fire Insurance Co., in making a report on the fire at the Granite Mills, Fall River, which occurred July 18th, says that blaze seems to demonstrate the desirability of separating cotton and cloth storage, as the water damage on cloth is much larger, while the greater hazard is in the cotton. This fire also shows that openings in fire walls subdividing storehouses are objectionable. There was an eight-inch division wall extending through the roof at this Granite Mill store house, which had a large opening provided with automatic fire doors on each side of the wall, but it had not been customary to keep the doors closed. When the fire came, cotton was so piled against them that they could not work.

A curious fire occurred July 18th in the worsted department of the Arlington Mills, Lawrence. A blaze was started in the warp shed very early one morning by spontaneous combustion. It apparently started in a warp chain originally dyed brown with nitro muriate of tin and a mordant, and afterward dyed black. It weighed about 30 pounds, and was bundled without a cover and deposited in the store room the afternoon before. There were no sprinklers in the room, and the fire ran rapidly over the 6000 pounds of chain warp on the floor and burned half through the roof at one spot, but did not get out of the room, though sufficient heat went through the passage, the fire doors of which had been left open, to open one sprinkler in the next compartment. It took two streams an hour to extinguish it. The watchman visited the room every hour.

—English textile workers are becoming alarmed at the absence of mill building in Lancashire, particularly in the face of large increases in spindles in Japan, Southern development in the United States, and extensions in India. They argue that the limit of speed has practically been reached, so that nothing more is to be gained without new construction.

—The failure of Hilton, Hughes & Co. was due to a variety of causes, among which that of store location was perhaps the principal. The assignment is chiefly interesting as showing the growing keenness of competition among the great department stores. Such establishments have come to stay, in the larger cities, but there is a limit to all things, a trueism which the Wanamakers of to-day seem to have temporarily lost sight of. While combinations are more easily arranged between a few large dealers than many small ones, the public need not be fearful of a lessening of competition. The failure has brought a lesson which shrewd dealers will not forget.

—Reports from the West state that the bright, cool days with which fall has been ushered in are having a stimulating effect on trade. It is true that thus far too few lookers have been buyers, but the interest with which they have scrutinized stocks shows that they are in the market, and will soon be purchasers.

KNITTING DEPARTMENT.

The Knit Goods Situation.

There is but little improvement noticeable in knit goods lines. Duplicate orders on fall goods are given by buyers with that feeling of hesitancy that shows plainly an undue fear of the results to the general business from political courses, and spring lines are not taken hold of with the confidence that might rightly be expected.

Despite the backward, hesitating, waiting attitude of the buyers, the feeling grows stronger among the manufacturers every day, that, no matter how some individual mills may suffer and not find it possible to get their proportion of seasonable trade, there is still very good business in store for all classes of staple knit goods, particularly on spring lines.

The most depressing feature to the mills is the difficulty of securing financial accommodation to meet running expenses.

The condition of the market, in respect to the stocks on hand and probable consumption is such as to justify expectations of renumerative business to mills able to find reasonable financial accommodations, but some small manufactures are obliged to look on and see a good demand pass their doors simply from being unable to secure it.

Take any line of staple hosiery and underwear, and we find that there are some mills running overtime, some running full time, while other mills, of like capacity and product, are often running less than half time, and many are altogether idle. Those posted on the management of mills assert that this difference in the prosperity of individual concerns comes not from the political situation, prices of the goods, state of stocks, or any lessened power of the consumer to buy, but simply, owing to a difference in financial backing, coupled with the fact that out standing debts are hard to collect.

Our news reports, however, would seem to show that there are a great many more cylinders in operation than a month ago.

As far as can be ascertained, none of the mills running are stocking up in anticipation of a large demand, their operations being entirely justified by orders booked, and a commendable conservatism characterizing the operations everywhere.

The importing trade seem to be fairly satisfied with the amount and value of the season's business, a greater volume having been done than during last season.

Prices generally are not so strong as might be hoped for, but are at the lowest limit they are likely to reach, and any change will be rather in an upward direction.

In hosiery particularly there seems to be a strengthening of prices, and the scarcity of bargains so persistantly looked for in seasons when buyers are adopting dilatory methods, gives an added strength to all staple lines.

Designing in Hosiery Manufacture—IV.

(Continued.)

Having explained the methods of designing on circular frames by the aid of the tuck presser, the various designs being produced in that particular stitch known as tuck work, it must be mentioned that other designs can be made by the aid of the same presser in another stitch known as "press off work," but from the principle of this stitch two

courses are required to be made upon the machine to produce one finished course. This reducing the production of the machine one-half, as compared with plain knitting, together with the fact of press off work having the thread pressed off, were not required to show at the face of the fabric, and so leaving same in long loops at the back of the fabric, make it a very limited method of design. The first causes slow production, and the latter a limited scope for design, as it would be useless to make a fabric with extra long loops at the back, a loop extending over 4 to 6 needles, according to gauge of fabric, being considered the maxim of practicability.

Press off work shows on the face of the fabric an ordinary plain loop of uniform size. This being the case, a similar faced fabric can be formed by a method known as plaiting, where two colored threads are used, one appearing on the face of the fabric and the other lying behind it, showing at the back of the fabric only. By this method, the thread at the back is formed into loops the same as the face thread, and therefore gives a perfect back which is preferable to the long loops, and so gives "plaiting" an advantage over "press off work," which gives the former an advantage when fabrics of two colors are required with a perfect equal face, the colors alternating from front to back as desired, in order to produce set designs. Another point in favor of plaited work is the production, the fabric being formed at the same rate as ordinary plain work.

The principles of forming fabrics by plaiting, having the whole of one thread at the front and the whole of the other at the back, are well known, many articles being made at the present time in such combinations as "silk face and wool back," "wool face and cotton back," both in stocking and underwear departments. In order to produce designs, it is necessary to change the position of the two threads being used at will and instantly, that is, between the formation of one loop and the next, and again, to reverse in a similar manner, as in the making of perpendicular stripes, where say 2 colors, black and white, are used, and each stripe is 4 needles wide, then at needles 1, 2, 3, 4, the white thread would be at front of fabric and black at back. Between needles 4 and 5 the threads are changed, and then needles 5, 6, 7, 8, have black thread at front and white at back; thus at every 4 needles round the frame the threads are changed. This at once brings us to the problem that in this class of designing we have again a relation between the pattern and the frame, as to make a 4 and 4 stripe, the number of needles must be divisable by 8, in order that each color may follow in its respective position.

Two distinct principles are adopted for the altering of the position of the threads: that having stationary thread guides, that having movable thread guides. Perhaps the former will be the one most in use on circular frames, being the system adopted on the French circular frame, with horizontal needles radiating from a given centre, the loops being formed by sinkers revolving in a loop wheel, each of which, as it passes the needles, sinks a loop, which is afterwards landed and knocked over by a separate perpendicular sinker, one of which stands between every needle, revolving with them.

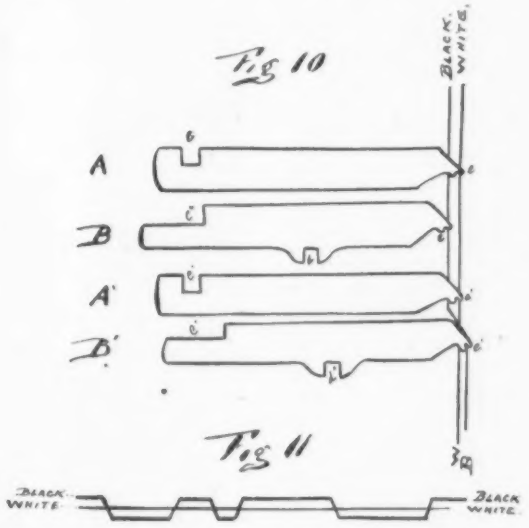
In this class of frames the thread is fed to the sinkers through stationary guides, which conduct the thread to the nib of the sinkers, which, as stated, form the loop. Now, in making ordinary plaited work on this class of frame, two guides are used, and in the case of plaiting cotton and wool, one thread guide contains the wool thread, the other the cotton, one of these guides being so arranged as to place the threads exactly in position required, and prevent them from changing this position during the forming of the loop.

Now to produce designs upon these

frames, we have only to see how the position of these threads are changed, so as to lay them in alternate position at any required needle or number of needles. This changing is here performed with the sinkers in the loop wheel, there being two kinds instead of one as is usual for plain work. These two sinkers are shown at Fig. 10, *A* being the ordinary sinker, *B* the design sinker, the required motion backwards and forward along the needles being differently given to each.

Sinker *A* works upon the motion cam at *C*, while the sinker *B* is cut away at the part *c*, in order that this cam may have no action whatever upon it, the motion to these being given by a centre cam working in projection of the sinkers which is so shaped to enable this, as will be seen at *d*, sinker *B*, Fig. 10. By again referring to this figure, it will be seen that two threads which are called, for example, black and white, lie side by side, the white being the front thread and the black lying behind it. The sinkers *A* and *B* are in length just so that the nib *l* of *A* and *B* catch their respective threads only as shown.

At *A'* and *B'* these two sinkers are again shown, but it will be seen that here *B'* has had a forward movement by which the black thread has been brought to the front of the white one. This forward motion is given to all designing sinkers *B'* just previous to their coming in contact with the needles, so that wherever *B* sinkers are placed the thread is taken by the sinker *B*, while on its backward position, and moves forward before it reaches the needles, so laying the thread in different position on the needles when forming the loop. Thus, ordinary sinker *A* always acts upon the white or ground work thread and the sinker *B* upon the black or designing thread, the latter passing and repassing the other as shown at Fig. 11. The design is therefore produced by the arrangement of the sinkers and not by the presses as in tuck work.



In designing to produce patterns on this system as explained, the same problems present themselves as in the case of designing by tuck presser. Each pattern has a breadth and depth, the two giving the total loops in the designs. These must compare with the number of needles in the frame, and in large frames having a large number of

needles, and of necessity a large number of loops or sinker wheels, some very large designs can be produced suitable for underskirts and even such fabrics as may be used as tapestry.

The system of designing will be explained in next article.

To be continued.

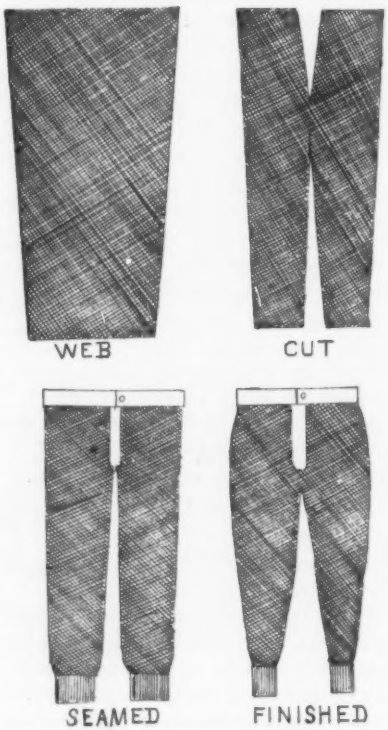
Cheap Processes of Making Underwear.

Regardless of the fact that builders of modern knitting machinery have perfected the processes of making and finishing underwear to such an extent that goods can be turned out so cheaply that a profit is possible, even if the prices obtained are far below what they were several years ago, the manufacturer is continually striving to make the goods a little cheaper. Any manufacturer can reduce the cost of production by reducing the standard of the goods. But that is not the point. Three factors must be held in view: first, the character of the stock must be kept the same; second, the texture must be as fine and durable; third, the finish must be as efficient. As the stock cannot be reduced in quality, the texture altered, or the finish changed, there is only one way for the manufacturer to get ahead of his competitors. He can reduce the costs of making by adopting quicker processes of manufacture, higher speeded machinery, etc. So long as the quicker processes do not interfere with the character of the goods, the reputation of the mill is not compromised.

The writer has noticed a very quick and efficient way of turning out men's drawers from a web. Ordinarily, the legs of the drawers are knit seamless, and fashioned on the machine. This is a good way, but costs more than the quicker method refered to, which is described in connection with the accompanying cuts, the web being shown first.

The web is knit on a flat bed, the width being reduced toward the lower end as shown. This forms either the front or the back of the drawer. It can be knit continuously, if desired, and the two sides doubled over, leaving the top closed, which is cut finally. When cut, the front part is like the sample shown and marked "cut," and the back is the same, except at the top, which is not cut. Next, the edges of the parts are seamed on the mechanical loopers, forming their legs and upper parts, after which the bands are sewn on the top and the anklets attached as indicated in the "seamed" sample.

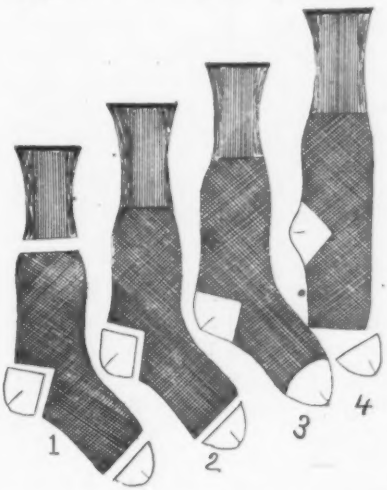
Thus far the work has been done



with rapidity, and there is appreciable gain in time, consequently the cost of production is lessened. The garments appear crude at this stage, but are brought to the proper proportions on the shaping boards. A light fulling in the mill, with the best of fulling soaps, starts the fibre to felting, and this draws up the lower part of the legs. While yet damp from the moisture of the ful-

ling process, the drawers are adjusted on the wooden shaping frames and allowed to stand in the dry room, until the texture sets. When taken off the boards, the garments present the shape as shown in the "Finished" specimen, and possess all the qualifications of a good article, so far as making is concerned. Of course, there can be no patent on such a process, and it is likely that other mills will adopt the method. The saving in cost of labor is only a few cents a garment, but when margins are as close as at present, it is beneficial to take advantage of any system that will tend to lower expenses.

Among the cheap processes for making footwear are the four styles shown



in this figure, in which No. 1 is made with the ribs sewn on and with cut and gussetted toes and heels. The leg and foot can be knit from a continuous web, if desired, the aperture for the heel being prepared by cutting half way through in the centre as shown. The process of making patent half-hose on this plan is cheap enough, but requires considerable seaming. No. 2 style, is made with the ribs run on, on the machine, and the heels and toes seamed on, as in the former process. Style 3 makes a good stock, in which the rib is run on and both toes and heels fashioned on the machine, making practically a seamless article. Type 4 is a rather odd way of making patent half-hose, but is adopted in some mills. The rib, leg and foot are knit circular and the heel worked in by alternate pressing of the needles, while the toe is sewn on after the article is off the machine.

BOSS KNITTER.

[It is a well-known fact that cut goods, *i. e.*, seamed goods, are made more rapidly than those looped on a mechanical looper, and certainly at less cost, with better wearing qualities, when the seams are covered, as is now done with the majority of cut goods. In the hosiery samples shown, style 3 is a regular seamless stocking; the others have been made for a long time. Our correspondent has omitted one style which is the cheapest to make, and which will sell in the same class with Nos. 1, 2 and 4. It is a plain fabric hose, made on an automatic machine, with a heel pocket knit in at proper intervals, then a rib top sewn on and a toe sewn in. This is the same as No. 4, except that the rib top is sewn on, instead of being knit on. The difference in the cost of making these various cut-foot and regular seamless goods, is very small, and considering the lower price at which the first named must be sold, there is doubt as to which is the cheaper.—ED.]

Reminiscences of Hosiery Sewing Machine Trimmer.

Those who are familiar with the hosiery industry will remember that prior to 1880 the principle part of manufactured hosiery was made with large seams, or the seams were cut by hand scissors after being sewed. This was universal, so far as goods sewed with the single thread, and on machines known as the Wilcox & Gibbs pattern, were concerned. There were stockings sewed and trimmed prior to 1880 on

what was known as the Blanchard or Zig-Zag seam, but the quantity was small in comparison to the whole output.

In 1879 or 1880 (I am not positive as to date) the writer invented a trimming device and offered it to manufacturers for use, and from facts which are patent to the well informed and unprejudiced, this was the first trimmer used for cutting and sewing of hosiery used in this or any other country for single thread straight away sewing.

In the long and tedious suits which followed the introduction of this trimmer, it was learned that there had been trimmers used in conjunction with sewing machines, but principally for the purpose of sewing and trimming of leather, and that J. W. March, of Massachusetts, had, as far back as 1852, patented a device for sewing and trimming leather with a lock stitch. The fact that Mr. March had secured such patent was a very fortunate occurrence for the manufacturers of hosiery, for if it were not for the said patent, a patent, subsequently granted to another party, would have prevented any person from sewing and trimming simultaneously with the formation of the stitch, and every one who used a trimmer in connection with the sewing machine would have been compelled to pay tribute to the last named patent.

While there are yet some few manufacturers using trimmers on sewing machines for sewing hosiery, they have practically been superceded by the automatic knitters, but quite a number of trimmers are used on shirts and drawers, in various ways. Some still use the single thread and trim as close as is safe, and make a fair seam, provided care is taken with the tension.

Quite a number are being used as a preliminary (as it were) to other variety of seams; as for instance, where goods are of a curly nature, and consequently, hard to get a straight seam without doubling up, they are first sewed with a single thread machine, and then covered with zig-zag, or some other fancy stitch.

From present appearances, a limited number of trimmers will stay with us for quite a time, as no device has been invented yet that will unite two stubborn curly edges at a rate of speed to warrant manufacturers in adapting them for general use, yet some of our very best goods are made from the cloth as it is cut, with abutted edges, but the cloth is prepared before cutting.

There has been quite an amount of time and money spent on the trimmer, and probably well spent, because the advantages to the manufacturer have been many. About the time of the introduction of the trimmer, a new factory law was passed in Pennsylvania which excluded small girls frem the mills, and the manufacturer would have had to pay more for trimming by hand, or allowed the goods to go with the old wide seam.

The leading manufacturers took quite a live interest in maintainance of their rights to cut goods, as I will show in a future article.

If users or manufacturers of trimmers will *carefully* read these articles, they may be benefited thereby, as it is proposed to give the history and state of the art up to the present time in as correct, fair and impartial manner as the writer is capable, having made part of the history. GIBBONS FRAME.

Making Union Undergarments.

Editor Textile World:

As the demand for union underwear is on the increase, it may be of interest to some of your subscribers to have the following rule for making a union undergarment for men, on flat machines. I have made this on a Lamb machine. It has an opening across the back at the waist, and is buttoned at the waist. This rule will answer for a man who measures 40 bust, and of medium

height. Can be made on a 16-inch flat machine, 10 needles to the inch, use three threads, No. 23 Egyptian cotton, or equivalent in any other material.

Rule for knitting the fronts. Set up 60 needles, with every other needle down, and knit 1 and 1 seam for the ankle. Then push up the needles between, so as to make a full seam; then knit 90 rounds. Now widen 1 needle front and back on one end and knit 4 rounds. Continue this way until you have widened 15 needles front and back. Knit 120 rounds. Now widen 1 needle on every corner, and knit 10 rounds. Continue until you have widened 3 needles on each corner. Now tighten your stitch one point and knit 40 rounds. Loosen the stitch one point and knit 75 rounds; then knit 55 rounds, racking the machine every half round.

This is one-half the front. Knit the other half same way, with the exception of widening on other end of machine, making them rights and lefts.

Rule for knitting the back of legs. Set up 60 needles in 1 and 1 seam, and knit 40 rounds. Push up the between needles, and knit 90 rounds full seam. Widen 15 needles one side in the same manner you did in the fronts, with 4 rounds between each widening. Knit 180 rounds. This finishes one-half the back of leg. Knit the other same way, except making them rights and lefts.

Rule for the back. Set up 150 needles full seam and knit 30 rounds. Then tighten stitch 1 point and knit 40 rounds. Loosen the stitch 1 point and knit 75 rounds. Then knit 55 rounds more, racking the machine every half round. This finishes the back.

Rule for knitting the gore. Set up 4 needles full seam and knit 3 rounds. Widen 1 needle on every corner. Knit 1 round. Widen this until you have widened 35 needles on every corner, that is, when you have finished widening, you have 74 needles in use. Knit 75 rounds, then narrow 1 needle on every corner and knit 2 rounds. Continue narrowing this way until you have 4 needles left. Then throw out the work.

Rule for sleeves. Set up 125 needles full seam and knit 10 rounds. Narrow 1 needle on every corner and knit 2 rounds. Continue narrowing this way until you have narrowed 10 needles on every corner. Knit 105 rounds. Now cast every other stitch onto the next needle, making it a 1 and 1 seam. Knit 40 rounds and throw out the work.

How to seam the garment. In joining the front and back legs, commence at the ankle and seam the back leg to within 8 inches of the top. In seaming the back, commence at the top and seam to within 1 inch of the bottom. In seaming the gore, commence at the top of back of leg with the longest tapering part of gore, and seam it to where the short tapering part of gore begins. Then turn up the short tapering part of gore and seam it to the front side of leg. Across the top part of back of legs put a band of silk, 1 inch or more wide, and make a similar band across the waist in the back, 2 inches above the bottom of back piece, and have these so as to button together. In the front, a facing is put the whole length, to 1 inch of point of gore on front side. The sleeves are seamed the same as ladies' unions. Facing on sides with buttons. LOCKWOOD.

Recent German Patents.

Prof. Wilkolm, of the Limbach hosiery school, gives an interesting account of the patents taken in Germany, in connection with the knitting industry. He gives the number of patents taken in hosiery, exclusive of those concerning sewing machinery, as exceeding four hundred during the years 1893-5. One-third relate to machinery and apparatus, two-thirds are applicable to finished goods.

The majority of the machinery patents are for improvements relating to

the Lamb knitting machine and the Cotton's system of rotary machine. In connection with the first named, those taking the lead are improved locks for making narrow widths of fabric on wide machines, following which are counting apparatus, driving mechanism, electric throwing out arrangements, springs, splicing carriers, special locks applicable particularly to rib work, latch openers, including brushes with interchangeable bristles, winding up apparatus, fancy design machines and slides with ball bearings.

On Cotton's patent frames improvements have been introduced relating to locking and sinking, new coverers for marking goods, tucking apparatus, improved narrowing mechanism, thread carriers for high heels, light carrier rods, arrangements for running stitch patterns for plush patterned goods, an apparatus applicable for making vertical striped hose, friction carriers for plating and for making plush fashioned goods. Improvements have also been introduced in connection with driving and winding up apparatus, interchanging from rib to pearl work, etc., and for the stopping of machines on the breakage of single threads, and last, but not least, those appertaining to the avoiding of accidents incidental to such machines.

In circular frames, the French Circular leads with a number of improvements in arrangements for drawing down the work, apparatus to measure the thread as it runs into the machine, and an electric motor fitted on the axle for direct driving. There are also various improved thread regulators, one of which is a duplex regulator, for long or short loops for plush work. Improved sinkers are also introduced for the making of twist work. To English circular frames is added an arrangement for making lining fabric and to rib frames for making a welt on patent rib work.

The double rib warp loom is also provided with arrangements for cutting plush and fringes, for making friezed and knotted fabrics, and embroidery machines have apparatus for ornamental thread work, bead classifying, and production of lamb skin.

In the finishing department are hose boards with changeable foot parts, and glove cutting shapes with changeable fingers.

In some instances the same thing has been patented over and over.

In manufactured goods there are patents for stockings having running stitch patterns, half circular patterns, on the front of legs, strengthened knees, heelless stockings, and stockings without feet, specialties made from fleecy and plush fabrics, and those with strengthenened calfs, also stockings combined with pants and belts, with separate toe divisions, those strengthened with leather, others with garters worked in, and with welts to pass the garter through. Several include interchangeable parts, such as heels, soles, toes, knee pieces, and protectors for heel, feet, etc. A stocking singed on the outer side to make it smooth and bright, and a knitted stocking of wire for surgical purposes completes the list of protections in this department.

In the glove department, patents have had nearly as much attention, of which a few include checked hands with plain seamless fingers, imitation ringwood gloves made on circular tuck frames. A glove with a pocket on the inside or outside of the hand has been patented several times. Gloves which will do for lefts or rights are also included. A number of cutting shapes are introduced, and have been patented, to simplify production and increase the application of different materials. A glove all in one piece without outside seams, seamless gloves, gloves with gussets, those with cross seams inside the hands, and with cross slits inside the fingers, to enable the fingers to be easily thrust out to take hold of any-

thing. Not to be passed unnoticed is an over-glove of knitted waterproof stuff to protect leather or kid gloves.

In shirts and pants, strengthening of various parts, special shaping of armholes and breast parts, and special position of the openings are the principal specialties protected, while a special finish has been introduced to breeches, whereby they resemble cloth.

There are also knitted rugs for bed, sleeping and horse rugs always circular, some of wool with and without lining, others of linen yarn with wool lining.

Masks of knitted material, knitted playing balls and chest protectors complete the list.

Suggestions on Automatic Machinery.

I had something to say about automatic machines in the June issue of the TEXTILE WORLD. Not too much automatism, just enough, is the present order of things. It is well for users to keep in mind the truth that even the most nearly perfect of such machinery is simply relatively automatic, and only trustworthy to a certain degree.

It is with this class of machinery as it is with the best of watches; they must be attended to at least every 24 hours to ensure correct time. In fact, automatic frames require more careful attention than other styles of frame, particularly if they are not equipped with stop motions. It is a great mistake on the part of manufacturers not to provide such equipment, expensive though it may seem at first, especially on the Jersey rib frames.

In England and Scotland, American automatic machinery is being tried. Thus there is being placed on the market, as regular goods, styles which (owe-ing to the cost of making by hand) have usually been classed as specials. Another year will doubtless see an extension of this introduction. Watch the patents issued every month. Success to American ingenuity. OLD SUPT.

—The exportation of American knitting machinery is on the increase. A number of the leading American builders are selling increasing quantities of their machinery abroad, and many of them have established agencies. In conversation recently with one of the largest American knitting machine manufacturers, he remarked that if it were not for his foreign trade, he would be unable to keep his establishment running this summer. His domestic business was almost at a standstill. The leading makes of automatics are coming into very general use on the other side.

—The oft-quoted Shakesperian line, "so shines a good deed in a naughty world," is brought forcibly to mind by a recent action on the part of the directors of the Chicopee Manufacturing Co., of Chicopee, Mass. They have voted a life pension to Miss Lois Reed, who has for 50 years been a faithful employee. The amount which Miss Reed will weekly receive is in excess of the amount she could earn at the present schedule, if she worked steadily, which makes the action the more noteworthy. Agent Henry A. Bailey suggested the matter to the board of directors, which is made up of Joseph Sawyer, Samuel Johnson, Arthur Beebe and Geo. L. Silsbee, of Boston, and Mr. Thorndike, of Scituate.

It is also pleasant to note in this connection that the Belding Silk Works, in Rockville, Ct., have just retired an overseer, who will receive an annual pension of $600 during life.

POWER DEPARTMENT.

O. R. YOUNG, M. E., Editor.

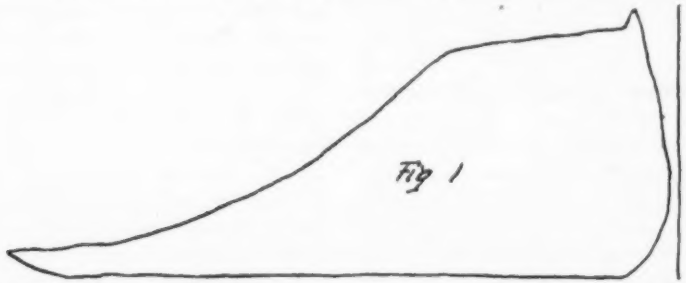
Blocked Indicator Pipe.

W. A. MORRISON, M. E.

The question was asked me a short time since, if the heads of a steam cylinder had no recess for the ports, and had but a slight projection as a shoulder and a counter-bore at the ends, what would be the effects of the piston covering the ports in its travel?

I have seen cards showing that state of things, but have none at hand at the present time. Doubtless there would be a great variety of opinions, and many theories advanced in reference to the subject, but it seems to me to be a very plain and simple proposition.

In the first place we are only to ask what would be the effect of closing the exhaust valve early, that is to say, from one to two inches before the piston has reached the end of the stroke, dependent upon the width of the port? The answer is plain; the piston does exactly what the valve would under the same circumstances, that is, would make a compression in the cylinder if sufficient exhaust steam was retained in the cylinder to produce that effect. The early closure of the exhaust or the cutting off the escape, by the piston closing the port, will produce exactly the same result.



But there is another side to the question: what is the effect on the other end of the cylinder in regard to the exhaust? Shutting off the passage in the exhaust port has a tendency to compress the steam in the passage, as we observe in all Corliss engines, which draws a card similar to the upturned toe of a shoe.

Now, what would be the effect of this procedure on the direct-steam side of the question? In the compression of the steam into the clearance space at the ends, the compression line having been formed by the indicator up to the point of reversing, the line should meet the initial pressure; but there is no initial pressure to meet until the piston permits it to enter. The line up to this point falls away from the head on account of this compression and at initial pressure it comes with a bound, producing a receding line above the ordinary initial pressure, due mostly to water as shown by the cut No. 1.

By referring to the cuts in connection with the explanations here given, the process will be clearly seen, also the action of the steam under these circumstances.

Cut No. 2 shows a card as it would be taken provided the recess in the heads were right in relation to the ports, and the valves set right, the efficiency being equal to the other.

These cuts are supposed to be the result of cards taken from an old style throttle non-condensing engine with a long valve, taking the steam at each end fron the steam chest and exhausting into a long passage leading to the exhaust pipe at the centre. The lower line represents the atmospheric line, the end lines the clearance.

Running Cool.

I chanced at one time, when working as a journeyman machinist, to work for a firm that built stationary engines, and it came about that a good deal of the time I was engaged in outside work setting up these engines. The first question the elder member of the firm would ask me upon my return from an erecting expedition was, invariably: "Does she run cool?" That being answered in the affirmative, it seemed to answer all requirements; not another word about that engine for two days.

This puzzled me some at first, but as I grew older in the engine business. I understood it better; understood better that when an engine runs cool it goes a long ways, like charity, in covering "the multitude of sins." When an engineer has in his hands a steam engine that he knows will run cool if it has a fair chance at the contents of the oil can, no fellow that has n't been there can understand the sense of relief that it gives him.

When an engine builder feels that he has got the proportions of his engines such that the wearing parts will remain cool under all reasonable conditions, a load is forthwith lifted from his mind. He sleeps easier for it. He may have wrestled with the problems of higher pressure, better material for and greater wearing surfaces, and all these things that help to make life uncomfortable, but when he gets all right on the question of heating, he has reached a condition of relief. Running cold is a sedative, both to the engineer and the builder.

Heating in a steam engine may come from a variety of causes, such as too little bearing surface, too great speed of these surfaces, improper lubrication, the bringing together of unsuitable surfaces, getting "out of line," etc., etc. Some of these the engineer has to do with, others the builder is responsible for.

Schoolmen laboring hard to establish formulæ for the proportions of the parts of steam engines, do good work, beyond question, but experience and common sense are better guides. The greasy old book in which the builder has entered his successes and his failures, his reasons for them, and his reasons for multiplying his practice, is more valuable than all the books ever published on the subject of hot engine bearings, and the careful, painstaking engineer of a steam plant will give points to the wisest among the schoolmen.

The careful and observant builder will find out what is best suited to the conditions under which his engines are used, and will govern himself accord-

ingly, if a wise man. Pushing aside all prejudice in the matter, and working from horse sense, he will achieve success. The trade of some builders is mostly from localities where the engine receives scant attention; is allowed to run with loose joints and loose boxes, and where minimum attention is given to lubrication, while another's engines may go to the trade where they receive about the same attention that a watch does. These different conditions, or others, will almost unconsciously govern, to a considerable extent—and it ought to—the practice of every steam engine builder. And the practice of engineers in charge of steam engines will be similarly governed. Neither engine builders nor engine runners can be governed by hard and fast rules.

Then, again, nothing is more common in such matters than a difference in opinion, hardly susceptible of explanation.

I once had the designing and the superintending of the construction of an engine, 18x42 inches—to be exact, it was 18 3-8 x 42 inches—purposely so. The engine was to run at 75 revolutions, boiler pressure 90 pounds. The full boiler pressure, as near as practicable, was operative against the crank pin up to the point of cut-off, which was instantaneous. The crank pin, which was of steel, was given a diameter of 4 1-2 inches and a length of 5 inches. The engine went so satisfactorily that when it had been running about a month, I invited a friend—an engine builder—to go with me and see it run. He was a good deal older man than I was, and I wanted to hear his criticism, if he should have any. His eye seemed to rest on the crank pin from his entrance to the engine room, and finally, turning to me, he inquired its size, which I gave him. After what was evidently a mental calculation, he asked me if I had used that proportion to any considerable extent, and after being told that I had used it in all that type of engine that I had built, he spoke up promptly, and with evident surprise, saying that so large a pin would not run cool for a half hour in an engine such as he built. I believed at the time, and do now, that he was mistaken, but did not argue the case. That crank pin gave absolutely no trouble for 14 years, to my knowledge.

I may mention incidentally, that the main journals were 8 1-2 inches in diameter. (They might just as well have been left 9 inches, but were turned down to 8 1-2 inches from preference.) They have been just as satisfactory, in use, as the crank pin. It was the intention when the shaft was ordered that the journals should be 9x18 inches, but I changed my mind in favor of turning them down to 8 1-2 inches. The shaft was of steel.

I only mention this in the hopes that an example of actual conditions may be of use to some one.—[F. F. Hemenway in the Tradesman.

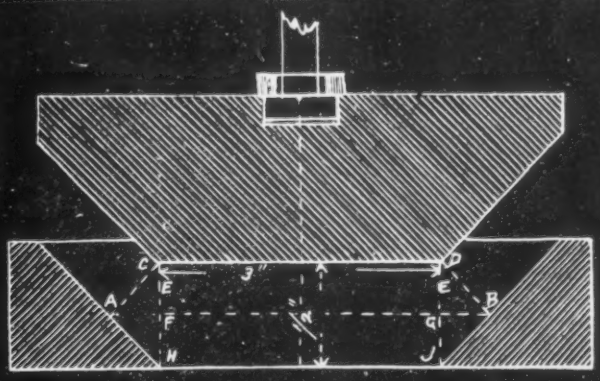
Chalk Talks.

TO FIND THE AREA OF OPENING OF A BEVEL SEATED VALVE WHOSE SEAT IS AT AN ANGLE OF 45 DEGREES TO THE CENTRE OF THE VALVE'S AXIS.

It is a comparitively common occurance for an engineer to find the area of opening of a flat seated valve, but trouble is sometimes experienced when one not versed in higher mathematics tries to compute the area of opening of a valve having a bevel seat.

It will be noted that the opening of a bevel seated valve (see plate) forms a cone (or more properly speaking the frustum of a cone) of which *A* and *B* show the base line diameter, *C D* the top diameter, *A C B D* the slant height. The letters *E E* show the lift of the valve which in this case is one-half (.50) of an inch.

The ordinary method of finding the average diameter would be to add the



EXAMPLE

.50 ($\frac{1}{2}$ inch) = Lift of Valve
3. inches = Diameter of Valve
3.1416 = Constant
.707 = " or Sine of angle of 45°

$$\left(\frac{.50}{2}+3\right)\times 3.1416\times(.707\times.50)=3.6 \text{ Sq in. area of opening}$$

2).50
.25 half of lift
3. Dia. of valve
3.25
3.1416
14450
325
1300
325
975
10.2100 Average Circumference of Valve

.707 Sine of angle
.50 Lift of Valve
.3535 Height of slant side

.3535 height of slant side
10.21 Average Circumference
3535
7070
3535
3.609235 Sq. in. = area of opening produced by lift of Valve.

Lords' Power Magazine

TO FIND THE AREA OF OPENING OF A BEVEL SEATED VALVE

diameter of the top of the cone to that of the bottom and divide by two, but as the line *C A H* and *D B J* form right angle triangles of equal size the distance from *A* to *F* or from *G* to *B* is the same as the perpendicular distance from *F* to *C*, *G* to *D*, *F* to *H* or *G* to *J*. Consequently by adding one-half of the lift *C H* or *D J* to the diameter of the valve *C D* we have the average diameter of the cone *C A B D* which multiplied by 3.1416 will give the average circumference.

As *C H* and *D J* each form the hypothenuse of a right angle triangle, multiplying the length of the line *C H* or *D J* by .707 (the sine of an angle of 45 degrees) the result will be the height of the slant sides *A C* or *B D*. Multiplying the average circumference by the height of the slant side (*A C* or *B D*) will give the area of the opening produced by the lift of the valve. The rule condensed is as follows:

Rule. To find the average circumference of a bevel-seated valve whose seat is at an angle of 45 degrees, add one-half of the lift, expressed in decimals of an inch, to the bottom diameter of the valve and multiply the result by 3.1416, which gives the average circumference. Multiply this sum by height of the slant side (the lift multiplied by .707) and the result will be the area in square inches of the opening made by raising the valve.

The Goubert Heater.

The construction of the Goubert heater, manufactured by the Goubert Heater Co., 14 Church St., New York, consists of two cast iron water chambers, connected by a cluster of seamless drawn brass tubes, rigidly secured at their ends to the tube-plates, by means of a roller tube expander, in the same manner that boiler tubes are secured to the heads. These are the only parts of the heater under boiler pressure, and are tested under 240 pounds, giving a safe working pressure of 160 pounds. The lower water chamber rests on legs on the floor, while the upper water chamber is free to move vertically as the tubes expand or contract. The tubes are surrounded by a cast iron shell provided with inlet and outlet nozzles, to which are connected the exhaust pipes.

This shell is bolted to the lower water chamber, but is free to expand independently of the tubes, its only connection at the top, with the upper tube plate, being made by means of a flexible copper gasket. This only serves to close up the space between the upper tube plate and the shell, no parts under boiler pressure being in any way weakened to provide for differential expansion. The expansion joint is entirely outside, and only in contact with the exhaust steam. It can be replaced like an ordinary gasket, and it is the only part of the apparatus that may need to be renewed; at the extremes of temperature, this expansion joint never has to spring more than three sixty-fourths of an inch either way, and in constant service lasts for years.

The water inlet and outlet pipes are made to project inside of the water chambers, and opposite them are placed dish-shaped deflectors, the purpose of which is to deflect the current, and thereby promote the separation of scum and sediment.

Suitable surface and mud blows and also a hand-hole are provided for cleaning.

The exhaust steam from the engine is admitted to the shell through the nozzle on one side, and spreading between the tubes, impinges upon them on its passage across to the outlet on the opposite side, the water of condensation being removed by the drip pipe, which should be kept always open.

It is immaterial whether steam is admitted on one side or the other, and the

(Continued on page 113.)

COLORS AND DYEING.

Conducted by CONYERS B. FINCKEL,

Professor of Chemistry and Dyeing at the Philadelphia Textile School, in whose Dye-house the tests are made.

Dye Receipts for September, 1896.

A Sample Color Sheet is issued each month by the TEXTILE WORLD, showing tests made by Conyers B. Finckel, Professor of Chemistry and Dyeing, in the Philadelphia Textile School, according to the recipes given in the TEXTILE WORLD. We show the latest colors and methods from month to month, and other tests of interest to the dyer. The extra cost of the Dyed Sample Sheets is $1.00 per year.

No. 65.

Blue Slate on Cotton Cloth.

Dyed with Direct Blue Black N (pat'd); Farbenfabriken of Elberfeld Co., 77 William St., N. Y.

(For 100 lbs. of cotton pieces.)

Dye bath is made up as follows:

1% Direct Blue Black N (pat'd),
10% Common Salt (sodium chloride.)

Enter the cloth (previously wet out) at 160° F., raise the temperature of the dye bath to the boiling point, and continue boiling for one hour. Wash and dry.

This dyestuff comes in the form of a blue black powder, very soluble in boiling water. It goes onto the fibre slowly and evenly, and the bath is almost exhausted. This sample shows the use of a small amount of the dyestuff in larger amounts. It gives a good black; the bath is not exhausted, and is kept as a standing kettle. The dyeing takes place with salt, and it is recommended to keep the temperature of the dye bath just under the boiling point. The first kettle is started with 7% dyestuff and 20% salt; the second kettle takes 6% dyestuff and 15% salt, the third kettle takes 5% dyestuff and 10% salt. After this the standing kettle is kept going with 5% of dyestuff and 7½% of salt. This dyestuff can be used as a self color, or in combination with the other direct cotton dyestuffs.

No. 66.

Blue Violet on All Wool Cloth.

Dyed with Acid Violet 6BN extra; Farbenfabriken of Elberfeld Co., 77 William St., N. Y.

(For 100 lbs. of scoured woolen pieces.)

Dye bath is made up as follows:

3% Acid Violet 6BN extra,
4% Oil of Vitriol (sulphuric acid),
15% Glauber's Salt (sodium sulphate calcined).

Enter the cloth (previously wet out) at 140° F., raise the temperature of the dye bath to the boiling point in 20 minutes and continue boiling for 30 minutes. Wash and dry.

This dyestuff comes in the form of a violet powder, is very soluble in water, and goes into the fibre very evenly. The bath is fairly well exhausted. This shade is very easily dyed, and is a very clear and blue shade of violet. It can be used alone, or makes a very good color in combination with the acid dyestuffs for the production of compound shades.

No. 67.

Medium Blue on Cotton Cloth.

Dyed with Madras Blue G; Sykes & Street, 85 Water St., N. Y., on a mordant of Sumac and Antimony.

(For 100 lbs. of cotton pieces.)

Mordant as follows:

30% Extract of Sumac (Sharpless Dyewood & Extract Co.)

Enter the cloth (previously wet out) at 180° F., keep at this temperature for

two hours, then drain and squeeze, and work for 30 minutes in a cold bath of

3% Antimony Salt (O. S. Janney & Co.)

Wash thoroughly and dye as follows:

1% Madras Blue G,
1% Alum (ammonium aluminum sulphate).

Dissolve these together in a small amount of boiling water, cool, and enter the mordanted cloth into the cold dye bath, raise the temperature of the dye bath to 160° F. in one hour; keep at this temperature for 20 minutes. Wash and dry.

NOTE. The large amount of sumac used is owing to the large amount of water required in the bath, and the cloth will not become saturated except in a concentrated bath.

This dyestuff comes in the form of a dark reddish-blue powder; it is quite soluble in water, but makes a better solution in the presence of alum. Even using only 1%, the bath does not exhaust thoroughly, and the shade produced is fairly heavy. If the directions for dyeing are strictly adhered to, there will be no danger of unevenness in the shade produced. This dyestuff can be used alone, or combined with the Basic Aniline dyestuffs.

No. 68.

Green Slate on Cotton Cloth.

Dyed with Thiocatechine and Noir Vidal (Vidal Black), and fixed with Sulphate of Copper; Sykes & Street, 85 Water St., N. Y.

(For 100 lbs. cotton pieces.)

Dye bath is made up as follows:

½% Thiocatechine,
5% Noir Vidal (Vidal Black).

Dissolve these in a small amount of boiling water, and cool to 140° F. Add

10% of Common Salt (sodium chloride),
7% of Soda Ash (sodium carbonate).

Enter the cloth (previously wet out) at 140° F., raise the temperature of the dye bath to 200° F., and keep at this temperature for one hour and wash.

5% Bluestone (copper sulphate),
5% Oil of Vitriol (sulphuric acid),

Enter the cloth into this bath at 140° F., and keep working at this temperature for 30 minutes, then wash thoroughly and dry.

These two dyestuffs, together with Cachon De Laval, make a very interesting set of colors. They all come in the form of a dull gray porous mass, which is not very heavy, and smell strongly of sulphur. Thiocatechine is the lightest of these. They all dissolve readily in boiling water, and go on to the fibre slowly. There is considerable danger of uneveness, but this can be overcome with care. The dyestuff must be thoroughly dissolved. The baths should contain as little water as possible, and the goods should be kept as much in the bath and out of the air as possible. (Also note comment under Receipt 69.)

No. 69.

Medium Brown on Cotton Cloth.

Dyed with Thiocatechine and Cachon De Laval, and fixed with Sulphate of Copper; Sykes & Street, 85 Water St., N. Y.

(For 100 lbs. of cotton pieces.)

Dye bath is made up as follows:

5% Thiocatechine,
10% Cachon De Laval.

Dissolve these in a small amount of boiling water and cool to 140° F., then add

10% Common Salt (sodium chloride),
7% Soda Ash (sodium carbonate).

Enter the cloth (previously wet out) at 140° F., raise the temperature of the dye bath to 200° F., and keep at this temperature for one hour, and wash.

5% Bluestone (copper sulphate),
5% Oil of Vitriol (sulphuric acid).

Enter the cloth into this bath at 140° F., and keep working at this temperature for 30 minutes. Then wash thoroughly and dry.

Sykes & Street have published an interesting card, showing the use of

BLEACHERS!

Write for pamphlet, just issued, on

BLEACHING

With Peroxide of Sodium.

THE ROESSLER & HASSLACHER CHEMICAL CO.

73 Pine St., - New York.

these three dyestuffs, alone and in various combinations, the dyeing being done on stock, yarn or cloth, giving shades of slate, tan or brown. Vidal Black alone fixed with chrome gives very good blues and blacks. Thiocatechine can be fixed with copper, chrome or hypochlorites, the hypochlorites giving the lightest and most yellow shades, while the copper gives the darkest and brownest shades. Cachon De Laval alone gives shades of slate, and thiocatechine alone gives from dull yellow to brown. We have only shown two of the combinations out of an almost infinite number.

No. 70.

Medium Indigo Blue on Cotton Cloth.

Dyed with Diaminozene Blue BB; W. J. Matheson & Co., 178 Front St., N. Y.

(For 100 lbs. cotton pieces.)

Dye bath is made up as follows:

3% Diaminozene Blue BB,
30% Glauber's Salt (sodium sulphate calcined),
½% Sal Soda (crystalized sodium carbonate).

Enter the cloth (previously wet out) at 160° F., raise the temperature of the dye bath to the boiling point and continue boiling for one hour. Then wash and work in a cold bath of

10% Muriatic Acid (hydrochloric acid),
3% Sodium Nitrate.

Run the cloth for 20 minutes in this, then wash and work in a bath of

1% Developer No. 1 (beta napthol),
1% Caustic Soda (sodium hydrate).

Work cold for 20 minutes. Wash and dry.

This dyestuff comes in the form of a dark blue powder, which is easily soluble in water. The dye bath is not exhausted, and can be kept for further lots. The use of the second bath is what is known as diazotizing. This should take place in as small an amount of water as is possible, and should be of sufficient strength that the odor of nitrous fumes is perceptible. The developing, or third, bath contains beta napthol and a small amount of caustic soda; excess of caustic soda should be avoided.

No. 71.

Peroxide of Sodium Bleach on All Wool Cloth.

Bleached with Peroxide of Sodium; Riessler & Nasslacher Chemical Co., 73 Pine St., N. Y.

(For 100 lbs. of scoured woolen pieces.)

Prepare bleaching bath as follows:

Enough water to cover the cloth, without letting it lie too closely together; stir into this slowly

13⅓% Oil of Vitriol (sulphuric acid).

Wait until this mixture becomes thoroughly cool, and then sieve slowly into the bath

10% of Peroxide of Sodium.

Then test the condition of the bath by means of litmus paper, or better still, a solution of phenolphtalein. If it is

acid it should be made alkaline by adding ammonium hydrate, slowly and thoroughly stirring until a drop of the bleaching bath burns the phenolphtalein solution pink.

Enter the cloth (previously wet out) into the cold bath, and let it stay immersed in the bath for 4 hours, stirring occasionally, raising the temperature to 120° F. Wash in cold water containing 20% of sulphuric acid for 15 minutes, then rinse thoroughly in water and dry.

The bath is not completely exhausted, and could be used to advantage to start a fresh lot of cloth bleaching, finishing it in a fresh bath.

Care must be taken in the use of the peroxide, and by adhering strictly to the directions there can be no danger in its use. The bleaching must take place in a slightly alkaline bath.

No. 72.

Peroxide of Sodium Bleach on Tussah Silk.

Bleached with Peroxide of Sodium; Roessler & Hasslacher Chemical Co., 73 Pine St., N. Y.

(For 100 lbs. of "boiled off" Tussah Silk.)

Prepare bleaching bath as follows:

Enough water to cover the silk without letting it be packed closely together. Stir into this slowly

26⅔% Oil of Vitriol (sulphuric acid).

Wait until this mixture becomes thoroughly cool, and then sieve slowly into the bath

20% of Sodium Peroxide.

Then test the condition of the bath, as given under receipt No. 71.

Enter the silk (which must be thoroughly wet through) into the cold bath; let it remain immersed for six hours, stirring occasionally; then wash for 15 minutes in a cold bath of 10% of sulphuric acid. Then wash thoroughly in water, and dry.

The Tussah silk is the hardest of all fibres to bleach, and it may sometimes require more than one bath to thoroughly bleach it. Some of the dyers make more of a success of it than is here shown, and have attained their results by much experimenting and practical work. The chemical principle of the bleaching is simple, but the practical application and handling require much study and thought as to the amount of bleaching agent and length of time and temperature. Peroxide of sodium and sulphuric acid give peroxide of hydrogen and sodium sulphate. Peroxide of hydrogen gives up one-half of its oxygen, which accomplishes the bleaching.

NOTE. In dyeing all of these samples the amount of water used in the dye bath was about 100 times the weight of the cloth. This is a larger amount of water than is used practically in the dye house, but owing to the small amount of cloth which is dyed, this large amount of water is necessary. Consequently some of the receipts given here, if dyed in a smaller amount of water, as is customary, would give darker shades than those here shown. This would be much more noticeable in the cotton samples than in the wool samples.

Remarks on the Dyed Samples.

Sample 65 shows a blue shade of slate and one which would be suitable to work in a trouser's stripe, using a cotton warp and black worsted feeling. The shade is as fast to washing as the general run of one-dip dyes; in larger amounts this gives a good black. The dyestuff is interesting from the fact that it will dye wool and cotton-mixed goods a good black in one bath. The shade here shown is very blue, in fact almost too blue to be a true slate. In a scouring solution, the shade becomes a trifle bluer and a faint bluish color is extracted in the scouring solution. White yarn plaited with it and scoured in the same solution, is slightly stained, show-

ing that the shade will resist only fairly well.

Hydrochloric acid, cold, does not affect the shade; hot, makes it somewhat lighter.

Sulphuric acid, cold and hot, acts the same as hydrochloric acid.

Ammonium hydrate, cold, makes the shade redder, with a blue color extracted; hot, the same, more color extracted.

Sodium hydrate, cold, makes the shade redder and lighter than Ammonium hydrate; hot, the same, with a red color extracted.

Sample 66 shows a good blue shade of violet, which, however, is not entirely fast to fulling, although it is as fast as the average colors dyed in the same way. The shade is very pure and would be useful as a self color, or in compounding. In a scouring solution, the shade is made lighter and a trifle redder, and a faint reddish blue color is extracted in the scouring bath. White yarn plaited with it and scoured in the same solution is stained where the violet crosses it, showing that the shade is not fast to fulling.

Hydrochloric acid, cold, makes the shade lighter and bluer; hot, makes the shade a greenish blue with a green color extracted.

Sulphuric acid, cold and hot, the same as with hydrochloric acid, except that the shade is not made so much lighter.

Ammonium hydrate, cold and hot, makes the shade a pale blue.

Sodium hydrate, cold, makes the shade a dull blue; hot, dull bluish red with reddish color extracted.

Sample 67 shows a shade of blue, closely resembling indigo, but inferior in fastness. The shade of blue is very full and very pure, and at the same time bright. In a scouring solution the shade becomes lighter and bluer and somewhat duller, and a heavy blue color is extracted in the scouring solution. White yarn plaited with it and scoured in the same solution is stained, showing that the shade is not fast to scouring or fulling.

Hydrochloric acid, cold, does not affect the shade; hot, makes it bluer with a blue color extracted.

Sulphuric acid, cold and hot, the same as with hydrochloric acid.

Ammonium hydrate, cold and hot, makes the shade a dull reddish blue.

Sodium hydrate, cold and hot, makes the shade a dull and brownish red.

Sample 68 shows a shade of slate with a decided greenish cast. This is a shade applicable to any class of cotton work and one of great fastness. This is one of a great number of shades produced with these three dyestuffs. In a scouring solution the shade appears a trifle less green. White yarn plaited with it and scoured in the same solution is not changed, showing great fastness both to scouring and fulling. No color is extracted in the scouring bath.

Hydrochloric acid, cold, makes the shade a dull slate; hot, the same and lighter.

Sulphuric acid, cold and hot, the same as with hydrochloric acid.

Ammonium hydrate, cold and hot, makes the shade a trifle greener.

Sodium hydrate, cold and hot, the same as with ammonium hydrate.

Sample 69 shows a good shade of brown, belonging to the same class of colors as No. 68, and dyed in the same way. This shade is also remarkable for its fastness, being applicable to any class of cotton work. In a scouring solution the shade is made a trifle less red, and no color is extracted in the solution. White yarn plaited with it and scoured in the same solution, is not stained, showing great fastness both to scouring and fulling.

Hydrochloric acid, cold and hot, makes the shade a trifle greener.

Sulphuric acid, cold and hot, the same as with hydrochloric acid.

Ammonium hydrate, cold and hot, makes the shade a trifle redder.

Sodium hydrate, cold and hot, the same as with ammonium hydrate.

Sample 70 shows a good blue, closely resembling indigo and one which is very fast. It is introduced as a substitute for indigo, and is extremely fast to light. This blue is the fastest and brightest of all the developed blues, and is ssserted to be exceedingly fast to fulling, washing, hot ironing. Even in light shades its fastness is superior to indigo. In a scouring solution the shade remains unchanged; no color is extracted in the scouring bath. White yarn plaited with it and scoured in the same solution is not changed, showing that it is entirely fast to scouring and fulling.

Hydrochloric acid, cold, has no affect on the shade; hot, makes it a trifle lighter.

Sulphuric acid, cold and hot, the same as with hydrochloric acid.

Ammonium hydrate, cold and hot, does not affect the shade.

Sodium hydrate, cold and hot, makes the shade a trifle bluer, also a trifle lighter.

Sample 71 and 72 show some interesting results in bleaching by means of peroxide of sodium. The natural color is destroyed. The advantage over all other bleaching is, that the yellow color never returns, and any shade can be properly dyed on the fibre that has been bleached with oxygen. Peroxide of sodium must be kept from the air and organic matter, and if all of the package is not used it should be again sealed. Dissolve the peroxide by sieving it slowly into water. Do not attempt to pour water on the peroxide. The best information on peroxide of sodium and its use can be obtained from a pamphlet published by the Rossler & Hasslacher Co.

The samples here shown have not been printed, as the practical dyer does not want to look at a printed sample when he is looking for results of bleaching. The best printing is with Methyl Violet BB, which has enough of a red cast in it to prevent the white from appearing greenish.

NOTE. All the samples shown in this sheet are first dyed in skeins and after satisfactory results have been obtained by experimenting, the colors are then dyed on pieces of cloth. All of the testing for fastness is done with the shade dyed on the original yarn samples.

In making the scouring test, the strength of the solution is 10 grammes of soap and 2 grammes of alkali (sodium carbonate) to 1 litre of water (1000 c. c.) Into this solution two samples are placed, one of which is plaited with white yarn, they are then allowed to remain in this solution 20 minutes at 130° F., then washed and dried and compared with the original sample. The one plaited with white yarn is rubbed and worked with the fingers, to give as nearly as possible the results obtained in a fulling mill, this of course is not so severe as the fulling mill, but is the best that we can do without the use of a fuller.

Smaller samples are then cut from the original skeins and tested with hydrochloric acid, sulphuric acid, ammonium hydrate and sodium hydrate. These solutions, with the exception of the ammonium hydrate are 10 per cent. solutions, and made as follows: 10 grammes of the concentrated acids and alkali in every 100 c. c. of water. The ammonium hydrate is the stronger water of ammonia of commerce. The samples are allowed to remain in these solutions for about 15 minutes cold, results are taken and then the solutions heated to the boiling point and results again taken.

CONYERS B. FINCKEL.
Prof. of Chemistry and Dyeing, Philadelphia Textile School.

Roundabout Notes.

Animalizing cotton is the process of imparting to the fibre, as far as dyeing is concerned, the properties possessed

by wool, so that ordinary wool processes and dyes can be used with cotton. The usual methods were to impregnate with albumen or with a solution of caseine. Other ways have been hit upon, but all are more or less unsatisfactory. Knecht now proposes the following method, and asserts that it gives excellent results. Half a pound of wool is dissolved boiling in about an equal weight of barium hydrate, and the barium is then precipitated from the boiling solution by means of carbonic acid. Water is then added to bring the solution up to one litre, and ten per cent. of commercial formaldehyde (40 per cent. strength) is mixed in. The cotton cloth is padded in this solution, dried, steamed for half an hour at 15 pounds pressure, and washed well in water. Thus prepared, the cotton can be dyed directly in any of the acid or basic dyestuffs, but the shades obtained are not so fast as on wool.

* * *

A German scientific paper notes that the extract of the leaves of the indigo plant fermented with weak acids gives solutions which yield indigo under the influence of atmospheric oxygen, and behave similarly to the solutions obtained by reducing ordinary indigo, precipitating with dilute acid, extracting with chloroform, and taking up the residue with water. Unfortunately it does not state whether or not there is any practical value to dyers in the discovery.

* * *

The Austrian Woolen & Linen Journal does not believe in the logic of the Herman alizarine manufacturers, who are urging the military authorities to use their products instead of indigo for military clothing. Although alizarine is a native product and indigo is not, the Journal points out that the manufacturers make their profit out of the alizarine not at home but abroad. "Alizarine", says this Journal, "has only two advantages over indigo. It is faster to rubbing and goes more evenly on thick cloth. In all other respects it is inferior." In many other respects, however, it is not greatly inferior, and the editorial might have mentioned that it is a much simpler process to dye with alizarine than with indigo. The writer allows, however, that, except against light and medium shades, alizarine is proving itself a strong rival. For uniforms, he has long used a bottom of indigo topped with anthracene blue or even alizarine black, thus gaining the durability under friction of alizarine, fastness to light, etc., of indigo. In England, the military authorities do not preclude the use of alizarines for military cloths, and in Germany even, the authorities are gradually taking a broader view on the subject.

* * *

The usual way of loading silk is to treat it in a bath of tin chloride of about 30 deg. Be. for an hour; wring out the superfluous chloride, and wash it thoroughly. The goods are then placed in a slightly heated bath of soluble phosphates, phosphate of soda of 3 to 5 deg. Be. being ordinarily used; after an hour this is washed again. Thus phosphoric stannic oxide is formed on the fibre, and the treatment is finished in a lukewarm bath of silicate of soda, finally washing. A French inventor recommends an additional passage through a bath of salts of aluminium, by which an increase in weight of 50 per cent. is obtained. A slightly heated bath of sulphuric salts of aluminium, with treatment for half an hour to an hour, is suggested. The silk is said to get a higher lustre and a better handle.

* * *

The Farbwerke Hoechst propose to get a discharge in calico printing by the partial or total destruction of betanaphthol on the fibre by oxidation, by means of persulphates. With the naphthol azo coloring matters there are already efficient means of producing a white discharge, but color discharges have so far been unsatisfactory. The inventors

have discovered that when the persulphates are added to the diazo printing color, they do not detrimentally affect the diazo compound, and after printing they convert the remaining excess of naphthol, by oxidation, into a compound which is no longer capable of combination.

* * *

If cotton steeped in a solution of beta-naphtholate of soda is printed with a little acetic acid, a persulphate, and the ordinary thickening, the naphthol is converted under heat, at the parts printed upon, into a substance no longer capable of combination. Therefore, if the fabric be afterward dyed in a diazo solution, lighter shades, up to nearly colorless ones, according to the concentration of the persulphate, will occur in the parts printed on. For example, to produce a blue pattern on a red ground, to imitate, for instance, indigo blue printed in discharge upon Turkey red, a printing color containing ammonium persulphate, diazotised dianisidine and a suitable copper compound, is printed on white cotton, padded with beta-naphtholate of soda. After drying, the fabric is dried in a diazo solution prepared from paranitraniline.

* * *

A new finish for felt hats has been patented in France. It forms an artificial skin and makes the felt completely waterproof. It is composed of 300 parts of acetone, 100 of acetic ether, 50 of sulphuric ether, 100 of camphor, 50 of gum lac, 200 of cotton, 10 of paper and 100 of small mastic. In preparation, the paper is dissolved cold in the sulphuric ether, after having been ground up in an edge runner. The cotton is dissolved in the same way in the acetone. Then all the other bodies are mixed with the two solutions in a vat, and stirred up and ground with a pestle.

* * *

A Manchester chemist has had a great idea and very naturally patented it. He proposes to impregnate yarns or cloths with some drug known to act as a preventative of fever, ague, etc. For instance, the yarn, before weaving, or the cloth in the last stage of bleaching or finishing, is treated with quinine. The inventor states that this will have a beneficial effect on the wearer, and perhaps it will, if he has a perfect faith and a large sized imagination.

* * *

A French patent proposes cellulose as a thickening for printing colors or mordants. The cellulose is first acted upon with hydrochloric acid, and when the action is sufficient, a solution of chloride of zinc is added. From five to eight parts of cellulose is used with 100 parts of concentrated solution of chloride of zinc. These are thoroughly mixed. Then the whole is heated with steam until the cellulose is completely dissolved. The liquid obtained is then used as a thickening.

—W. W. Hanna, 135 North Water St., Philadelphia, has put his business into corporate form, and the concern will hereafter be known as the Hanna-Schœllkopf Co. The officers are: J. F. Schœllkopf, Jr., president; W. W. Hanna, vice-president and treasurer; Jesse W. Starr, 3d, secretary. Mr. Hanna started in business for himself nearly a decade ago, after having long been salesman for the largest aniline houses in the trade. The enterprise grew steadily until he was forced to move to larger and better quarters not long ago. The company's facilities are now of the best and will well repay inspection.

—American manufacturing exports in July, reached nearly $26,000,000 and for the calendar year, United States statisticions estimate that they will go over $240,000,000, or the largest ever known. In 1895, they amounted to $228,498,893; in 1892, when exports touched the high water mark of $1,015,732,011, manufactures aggregated only $158,510,837. Hence, the incoming tide of gold.

BUYERS' INDEX.

Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

Alphabetical Index to Advertisements follows this Classified List.

Architects and Mill Engineers.
Berlin Iron Bridge Co, The, East Berlin, Ct.
Ferguson, John W, Patterson, N. J.

Automatic Boiler Feeds.
D'Este & Seeley Co, 29 Haverhill St, Boston

Balling Machine.
Torrance Mfg. Co, 18 Davis St, E. Newark N. J.

Bandings.
See under Yarns.

Banding Machines.
Cole Bros, Pawtucket, R. I.

Baskets.
Barlow, John W, Lawrence, Mass. (Rawhide).

Belting.
Alexander Bros., 410 No. 3d St., Phila., Pa.
Chicago Raw Hide Mfg. Co, 191-193 High St, Boston.
Danforth Belting Co, 221 Chestnut St, Phila, Pa.
Fell, Geo. & Son, Bolton, England.
Munson, Chas, Belting Co, Phila, Pa.
Popham, Henry, & Son, East Newark, N. J.
Snyder, M. L, 25 So. Second St, Phila, Pa.
See also Mill Supplies.

Belt Dressing.
Alexander Bros, 410 No. 3d St, Phila, Pa.
Danforth Belting Co, 221 Chestnut St, Philadelphia, Pa.
Rhoads, J. E, & Sons, 239 Market St, Philadelphia, Pa.
Southwick, Geo. W, & Co, Stamford, Ct.

Bindings.
See Tapes and Braids.

Bobbin Covers.
Hegeman, John, Amsterdam, N. Y.

Bobbins, Spools, Shuttles, Etc.
Woonsocket Shuttle Co, Woonsocket, R. I.

Boiler Compounds.
Imperial Chemical Co, 432 Market St, Phila, Pa.
Lord, G. W, 316 Union St, Phila, Pa.

Boxes, Paper.
Palmer, J. S, 35 Wistar St, Germantown, Pa.

Boxes, Wooden.
Pearson, J. T, Kensington, Pa.

Braids.
See Tapes and Braids.

Braiding Machines.
Thun & Janssen, Reading, Pa.

Burr Pickers.
Atlas Mfg. Co., Newark, N. J.
Sargent's, C. G., Sons, Graniteville, Mass.

Card Clothing.
American Card Clothing Co, Worcester, Mass.
Ashworth, Elijah, Fall River, Mass.
Leigh, Evan A, 35 Mason Building, Boston.

Card Cutters.
Hand, Fredk, & Co, 159 Van Houten St Paterson, N. J.

Card Feeds.
Atlas Mfg. Co , Newark, N. J.
Woonsocket Machine & Press Co, Woonsocket, R. I.

Calico Printers' Machinery and Supplies.
New Bedford Copper Co, New Bedford, Mass.
See also Dyeing, Bleaching Machinery, etc.

Carpet Machinery.
Altemus, W. W, & Son, 2816 N. 4th St, Phila, Pa.
Bethune, L. W, 128 Pearl St, N. Y.
Crompton Loom Works, Worcester, Mass.
Curtis & Marble Machine Co, Worcester, Ms.
Furbush, M. A, & Son, Machine Co, Phila, Pa.
Howard, Geo. C., 1783 Barker St., Phila., Pa.

Chemical Stoneware.
American Fire Brick Works, 2637 E. Cumberland St, Philadelphia.

Coal.
Dominion Coal Co, Ltd, 95 Milk St, Boston

Combs, Hackles, Pins, Etc.
Townsend, Thos, Providence, R. I.

Cop Tubes.
Taylor, Chas. F, Providence, R. I.

Copper Print Rollers.
New Bedford Copper Co, New Bedford, Mass.

Copper Work for Dyers.
Brabender, Chas, Sr, Paterson, N. J.
Oat, Jos. & Sons, 232 Quarry St, Phila, Pa.

Cotton.
Blaisdell, S, Jr, Co, Chicopee, Mass.
Capelle, Herman, cor. Leonard St. and W. Broadway, N. Y.

Cotton Combs.
Townsend, Thomas, Providence, R. I.

Cotton Machinery.
Altemus, W. W, & Son, 2816 N. 4th St, Phila, Pa.
Ashworth, Elijah, Fall River, Mass.
Atherton Machine Co, Lowell, Mass.
Bethune, L. W, 128 Pearl St, N. Y.
Blaisdell Feeder Co, 29 Oliver St, Boston, Mass.
Cole Bros, Pawtucket, R. I.
Curtis & Marble Machine Co, Worcester, Mass.
Draper, Geo, & Sons, Hopedale, Mass.
Easton & Burnham, Pawtucket, R. I.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Howard & Bullough American Machine Co, Pawtucket, R. I.
Kilburn, Lincoln & Co, Fall River, Mass.
Knowles Loom Works, Worcester, Mass.
Leigh, Evan A, 35 Mason Building, Boston.
McKerrow, H. G, & Co, 31 State St, Boston, Mass.
Mason Machine Works, Taunton, Mass.
Providence Machine Co, Providence, R. I.
Saco Water Power Machine Shop, Biddeford, Me.
Thun & Janssen, Reading, Pa.
Whitin Machine Wks, Whitinsville, Mass.
Woonsocket Machine & Press Co, Woonsocket, R, I.

Cotton Openers and Lappers.
Atherton Machine Co, Lowell, Mass.
Howard & Bullough American Machine Co. Pawtucket, R. I.
McKerrow, H. G, & Co, 31 State St, Boston, Mass.

Cotton Webbing.
Witter, H. M. & Co, Worcester, Mass.

Cutters for Knit Fabrics.
Kennedy, Thos. (Cutters, etc.,) Cohoes, N. Y.

Damper Regulators.
D'Este & Seeley Co. (Curtis), 29 Haverhill St, Boston, Mass.
Watts Regulator Co, Lawrence, Mass.

Dryers.
Philadelphia Textile Machinery Co, Philadelphia, Pa.
Sargent's, C. G., Sons, Graniteville, Mass.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass.

Dusters.
See Wool and Waste Dusters.

Dyeing, Bleaching and Finishing.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Greenwood, R. & Bault, Frankford, Pa.
Home Bleach & Dye Works, Pawtucket and Valley Falls, R. I.
Kensington Dye Works, Kensington, Pa.
Providence Dye Works, Kensington, Pa.
Warren, W, Thread Works, Westfield, Mass.

Dyeing, Drying, Bleaching and Finishing Machinery.
American Napping Machine Co, Williamstown, Mass.
Bethune, L. W, 128 Pearl St, New York.
Birch Bros., Somerville, Mass.
Butterworth, H. W, & Sons Co, Phila, Pa.
Delahunty Dyeing Machine Co, 152 N. Front St, Phila, Pa.
Curtis & Marble Machine Co, Worcester, Mass.
Fairmount Machine Works, 22 and Wood Sts, Philadelphia.
Granger Foundry & Machine Co, Providence, R. I.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Lincoln & Co, 54 Arch St, Hartford, Ct.
Parks & Woolson Machine Co, Springfield, Vt.
Phenix Iron Foundry, Providence, R. I.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass. (Drying.)
Woonsocket Machine & Press Co, Woonsocket, R. I.

Dyestuffs and Chemicals.
Anchor Color Mfg. Co, 464 Cherry St, New York.
Arnold, Peck & Co, Providence, R. I.
Ashley, T. C, & Co, 145 Milk St, Boston.
Atteaux, F. E, & Co, 172 Purchase St, Boston, Mass.
Avery Chemical Co, 169 Devonshire St, Boston, Mass.
Beach & Co, Hartford, Ct.
Bischoff, & Co, 80 Front St, N. Y.
Bosson & Lane, 36 Central Wharf, Boston.
Browning & Bros, 42 N. Front St, Phila, Pa.
Bullock & Crenshaw, 528 Arch St, Phila, Pa.
Corey, S. J, 273 Congress St, Boston.
Dale Extract Co, Rahway, N. J.
Farbenfabriken of Elberfeld Co, 77 William St, N. Y.
Geisenheimer & Co, 189 Front St, New York.
Hanna, W. W, 52 N. Front St, Phila, Pa.
Harway Dyewood & Extract Mfg. Co, 184 Front St, N. Y.
Hill, Edward's, Son & Co, 25 Cedar St, N. Y.
Horstall, Jonathan, 216 Chestnut St, Phila.
Jaeck Bros, J, 62-68 No. 11th St, Brooklyn, N. Y.
Janney, O. S, & Co, Phila. and Boston.
Johnson, Chas. A, & Co, 22 Dey St, N. Y.
Johnson, Wm. G, & Co, Uncasville, Conn.
Kalbfleisch, Edward L, & Son, 56 Pine St, New York.
Kalbfleisch, Franklin H, Co, New York.
Kalle & Co., 77 John St., N. Y.
Keller, John J, & Co, 104-106 Murray St, N. Y.
Klipstein, A, & Co, 122 Pearl St, N. Y.
Koechl, Victor, & Co, 79 Murray St., N. Y.
Matheson, W. J, & Co, 178 Front St, N. Y.
Naumkeag Dye Co, Salem, Mass.
Oakes Mfg. Co, 93 Pearl St, N. Y.
Phillips, Moro Chemical Co, 131 S. 3d St, Phila., Pa.
Pickhardt, Wm, & Kuttroff, 98 Liberty St, New York.
Polhemus, Henry, 66 Maiden Lane, N. Y.
Roessler & Hasslacher Chemical Co, 73 Pine St, New York.
Sharpless Dye Wood Ext. Co, 22 N. Front St, Phila, Pa.
Stamford Mfg. Co, 157 Maiden Lane, N. Y.
Sykes & Street, 85 Water St, N. Y.
Warren Chemical Co, New York.

Dyers and Finishers.
Bay State Dyeing & Finishing Co, North Andover Depot, Mass.
Boston Finishing Works, Williamstown Mass.
Cranston Worsted Mills (yarns), Bristol R. I.
Greenwood, R, & Bault, Frankford, Pa.
Home Bleach & Dye Works, Pawtucket, R. I.
Kensington Dye Works, Kensington, Pa.
Oakdale Dye Works, 913 W. York St, Phila, Pa.
Pawtucket Dyeing & Bleaching Co, Pawtucket, R. I.
Providence Dye Wks, Kensington, Pa.
Warren, W, Thread Works, Westfield, Mass.

Dyers' Clogs.
Wildman, Jos, & Co, 1908 N. Front St, Phila.

Electrotyping and Printing.
J. J. Ryder & Co, 210 Westminster St, Providence, R. I.

Elevators.
Cohoes Foundry & Machine Co, Cohoes, N. Y.
Graves Elevator Co, Rochester, N. Y.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
McCalvey Elevator Works, Phila, Pa.
Salem Foundry & Machine Shop, Salem, Mass.

Engineers, Electrical.
Adams, A. D, 620 Atlantic Ave, Boston, Ms.
Smeallie Bros, Amsterdam, N. Y.

Engineers, Mechanical.
Berlin Iron Bridge Co, E. Berlin, Ct.
Ferguson, John W, Paterson, N. J.
Smeallie Bros, Amsterdam, N. Y.

Engraving on Wood.
Ryder Co, J. J, 210 Westminster St, Providence, R. I.

Express Money Orders and Travelers' Cheques.
American Express Co, offices in every city

Factory Sites.
Dolge, Alfred, Dolgeville, N. Y.
Heffron, H. K, & Co, Utica, N. Y.
Illinois Central R. R, 506 Central Station, Chicago, Ill.

Feed Water Heaters.
Goubert Mfg Co, 14 Church St, New York.

Feed Water Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Phœnix Iron Foundry, Providence, R. I.
Smeallie Bros, Amsterdam, N. Y.

Finishing Machinery.
See Dyeing, Drying, Bleaching and Finishing.

Fire Brick.
American Fire Brick Works, 2637 E. Cumberland St, Philadelphia.

Fire Doors and Shutters. (Automatic.
Victor Mfg. Co., Newburyport, Mass.

Fire Hose.
Rhoads, J. E, & Son, 239 Market St, Philadelphia, Pa.

Fluted Rolls.
Cohoes Foundry & Machine Co, Cohoes, N. Y
Thurston, A. G, & Son, Box 525, Fall River. Mass.

Fuel Oil Furnaces.
Rockwell, W. S, & Co, 27 Cortland St, N. Y.

Gas Singeing Machines.
Curtis & Marble Machine Co, Worcester, Ms.

Gear Cutting Machine.
Blaisdell, P, & Co, Worcester, Mass.
Whiton, The D. E, Co, New London, Conn.

Grates.
Argand Grate Bar Co, New York.

Heating.
See Ventilating.

Hosiery Boards.
Pearson, J. T, Kensington, Pa.

Hydro-Extractors.
American Tool & Machine Co, 302 Federal St, Boston.
Bethune, L. W, 128 Pearl St, N. Y.

Index.
Burr Index Co, 336 Asylum St, Hartford, Conn.

Knit Goods Edgings, Trimmings, etc.
Byram, F. A, Germantown, Pa.
Cheney Bros, Silk Goods, 479 Broome St, N. Y.
Fleming & Chapin, 215 Church St, Phila, Pa.
Friedberger, C, Edgings, Germantown, Phila, Pa.
Hepner & Horwitz, Lacings, 30 Howard St, N. Y.
Krout & Fite Mfg. Co, 2632 Mascher St, Phila.

Knit Goods Finishing Machines, Crochet, Etc.
Champion Sewing Machine Co, 1819 N. 5th St, Phila, Pa.
Merrow Machine Co, The, Hartford, Conn.
Nye & Tredick, 606 Arch St, Phila, Pa.
Scott & Williams, 6th and Arch Sts, Phila, Pa.

Knitting Machine Cylinders.
Ashman, Stephen A, 3 Fetter Lane, Phila, Pa.
Paxton & O'Neill, 129 Bread St, Phila, Pa.
Stafford, W, & Co, Little Falls, N. Y.
Stanton & Lewis, 318 Branch St, Phila, Pa.

Knitting Machinery.
American Tool & Machine Co, 302 Federal St, Boston.
Ardrey, S. B, & Sons, Bristol, Pa.
Brinton, H, & Co, 213 Race St, Phila, Pa.
Campbell & Clute, Cohoes, N. Y.
Champion Sewing Machine Co, N. W., cor. American and Diamond Sts, Phila, Pa.
Crane Mfg. Co, Lakeport, N. H.
Excelsior Knitting Machine Co, South Bethlehem, Pa.
Hepworth & Co, Lehigh Ave. and Mascher St, Phila, Pa.
Hodgson & Holt, Laconia, N. H.
Jenckes, E. Mfg. Co, Pawtucket, R. I.
Jones, Lewis, 60 1-2 and Media Sts, Philadelphia, Pa.
Kennedy, Thos. (Cutters, etc.), Cohoes, N. Y.
Keystone Automatic Brushing Co, Ltd., Spring City, Pa.
Leighton Machine Co, Manchester, N. H.
Mayo Knitting Machine Co, Franklin, N. H.
Mueller, A, 780 Lexington Ave, Brooklyn, N. Y.
Nye & Tredick, 606 Arch St, Phila, Pa.
Paxton & O'Neill, 129 Bread St, Phila, Pa.
Pepper Mfg. Co, Lakeport, N. H.
Scott & Williams, 6th and Arch Sts, Phila, Pa.
Stafford, W, & Co, Little Falls, N. Y.
Standard Machine Co., 508 Minor St., Philadelphia, Pa.
Taylor, James, 835 Arch St, Phila, Pa.

Knitting Needles.
Breedon, Wm, & Son, Amsterdam, N. Y.
Corey, Wm, Co, Manchester, N. H.
Ives, Loyal T, New Brunswick, N. J.
Lydall, H, & Foulds, Manchester, Conn.
Star Needle Co, New Britain, Conn.
Treat, Orion, Manchester Green, Conn.
Wardwell Needle Co, Lakeport, N. H.

Laboratory Outfits.
Bullock & Crenshaw, 528 Arch St. Phila, Pa.

Lace Leather.
Rhoads, J. E, & Son, 239 Market St, Phila, Pa.
Southwick, G. W, & Co, Stamford, Ct.

Law, Collection and Reporting Bureau.
Columbia Law, Collection and Reporting Bureau, East Haddam, Conn.

Looms.
Bethune, L. W, 128 Pearl St, New York.
Crompton Loom Works, Worcester, Mass.
Draper, Geo. & Sons, Hopedale, Mass.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Furbush, M. A, & Son Co, Phila, Pa.
Gilbert Loom Co, Worcester, Mass.
Howard, Geo. C., 1733 Barker St, Phila., Pa. (For wire.)
Kilburn, Lincoln & Co, Fall River, Mass.
Knowles Loom Works, Worcester, Mass.
Mason Machine Works, Taunton, Mass.
Whitin Machine Works, Whitinsville, Ms.
Woonsocket Machine & Press Co, Woonsocket, R. I.

Loom Picker Manufacturers
Barlow, John W, Spicket Mill, Lawrence Mass.
Loom Picker Co, Biddeford, Me.
Novelty Loom Picker Works, 3-7 So. 48th St, Philadelphia, Pa.

Lubricators.
Dixon, Jos, Crucible Co, Jersey City, N. J.

Lumpers.
Gerry, George, & Son, Athol, Mass.

Machinery Dealers.
Schofield, Geo. L, 123 N. Front St, Phila,
Scott, James, 123 No. Front St, Phila, Pa.

Machinery Wipers.
American Silk Mfg. Co, 311 Walnut St, Philadelphia, Pa.

Machinists' Tools.
Blaisdell, P, & Co, Worcester, Mass.
Whiton, The D. E. Co, New London, Conn.

Mails.
Walder, J, Paterson, N. J.

Manufacturing Chemists.
Kalbfleisch, Franklin H, Co, New York.

Measuring and Folding Machines.
Curtis & Marble, Machine Co, Worcester, Ms.
Elliott & Hall, 544 Harmon St, Worcester, Mass.

Mechanical Rubber Goods.
Snyder, M. L, 25 So. Second St, Phila, Pa.

Mill Builders[and Engineers.
Berlin Iron Bridge Co, The, East Berlin, Ct.
Ferguson, John W, Paterson, N. J.

Mill Supplies.
American Supply Co, Providence, R. I.
Buckley's, Benj. Son, Gun Mill, Paterson, N. J.
Chicago Raw Hide Mfg. Co, 191-193 High St, Boston.
Covel & Osborn, Fall River, Mass.
Hill, Jas, Mfg. Co. Providence, R. I.
Popham, Henry, & Son, East Newark, N. J.
Snyder, M. L, 25 So. Second St, Phila, Pa.
Sweet & Doyle, Cohoes, N. Y.
Thurston, A. G, & Son, Fall River, Mass.

Napping Machines.
American Napping Machine Co, Williamstown, Mass.
Ardrey, S. B, & Sons, Bristol, Pa.
Bethune, L. W, 128 Pearl St, N. Y.
Jones, Lewis, 60 1-2 and Media Sts., Philadelphia, Pa.
Keystone Automatic Brushing Co., Ltd., Spring City, Pa.
Parks & Woolson Machine Co, Springfield, Vt.
Woonsocket Napping Machine Co, Woonsocket, R. I.

Oilless Bearings.
N. American Metalline Co, 62 W. Ave. and 3rd St, Long Island City, N. Y.

Paints.
American Fire Resisting Paint Co, 17 Broadway, New York.
Goetz, O, Broad St, New York.

Pantagraphs for Mill Engraving.
Johnson, C. A, 22 Dey St, New York.

Paper Tubes for Cone Winders.
Taylor, Chas. F, Providence, R. I.

Patent Solicitors.
Crosby & Gregory, 34 School St, Boston, Mass.
Crossley, Arthur W, 23 Court St, Boston, Mass.

Penstocks.
Dalrymple, George, Fair Haven, Vt.

Picker Sticks.
Loom Picker Co., Biddeford, Me.

Picking, Carbonizing and Garnetting.
Garfield Woolen Co, Garfield, N. J.

Pneumatic Conveying.
See Ventilating.

Power Transmitting Machinery.
Alcott, T. C., & Son, Mt. Holly, N. J.
Cresson, Geo. V, 1800 Allegheny Ave, Phila, Pa.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Kilburn, Lincoln & Co, Fall River, Mass.
Smeallie Bros, Amsterdam, N. Y.
Watson, A, 2136 Dickerson St, Phila, Pa.

Presses.
Crawford. J. J, & Son, Nashua, N. H.
Curtis & Marble Machine Co, Worcester, Ms.
Hodgson & Holt, Laconia, N. H.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Taylor, James, 835 Arch St, Phila, Pa.
Woonsocket Machine & Press Co, Woonsocket, R. I.

Pressure Regulators for Steam and Water.
D'Este & Seeley Co. (Curtis) 29 Haverhill St, Boston, Mass.
Watts Regulator Co, Lawrence, Mass.

Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Kalbfleisch, Franklin H, Co, New York.
Smeallie Bros, Amsterdam, N. Y.

Reed and Harness Manufacturers.
American Supply Co, Providence, R. I.
Gowdey, J. A, & Co, Providence, R. I.
Loom Picker Co, Biddeford, Me.
Walder, J, Paterson, N. J.

Ribbons.
Cheney Bros, S. Manchester, Ct.
Friedberger, C, Germantown, Pa.

Roll Coverers.
Barlow, John W (worsted rolls), Lawrence Mass.
Tripp, John, Dutton St, Lowell, Mass.

Roller Skins.
Fell, Geo, & Son, Bolton, England.
Gerrish Wool & Leather Co, Manchester, N. H.
Winslow Brothers, Norwood, Mass.

Roofing, Gravel, Slag and Composition.
Armitage Mfg. Co, Richmond, Va.

Roofing, Paint and Paper.
Armitage Mfg. Co, Richmond, Va.

Roofing, Steel and Tin.
Chattanooga Steel Roofing Co, Chattanooga, Tenn.

Roving Cans and Sheet Metal Work for Mills.
Hill, Jas, Mfg. Co, Providence, R. I.
N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.

Sewing Machines and Supplies.
Birch Bros., Somerville, Mass.
Champion Sewing Machine Co, N. W., cor. American and Diamond Sts, Phila, Pa.
Frame, Gibbons, 2nd and Diamond Sts, Phila, Pa.
Nye & Tredick, 606 Arch St, Phila, Pa.
Scott & Williams, 6th and Arch Sts, Phila, Pa.

Shearing Machinery.
See Dyeing, Drying, Bleaching and Finishing

Shell Rolls.
Cohoes Foundry & Mach. Co, Cohoes, N. Y.
Thurston, A. G, & Son, Box 528, Fall River, Mass.

Shoddies.
See Wool Shoddies.

Shuttles.
See Bobbins, Spools, Shuttles, Etc.

Singe Plates.
New Bedford Copper Co, New Bedford, Ms.

Sizing.
American Glutrose Co. Penn Mutual Bldg, Phila, Pa.

Skylights (Metal).
Van Noorden & Co, Boston, Mass.

Soaps.
American Soap & Washolene Co, Cohoes, N. Y.
Draper, J. O, & Co, Pawtucket, R. I.
Holbrook Mfg. Co., 406 Washington St., N. Y.
India Alkali Works, Boston.

Spindles.
Buckley, Benj's, Sons, Gun Mill, Paterson, N. J.
Draper, Geo, & Sons, Hopedale, Mass.
Easton & Burnham, Pawtucket, R. I.
Providence Machine Co, Providence, R.I.
Whitin Machine Wks, Whitinsville, Mass.

Spinning Cylinders.
Hill, Jas, Mfg. Co, Providence, R. I.
N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.

Spinning Frames.
See Cotton Machinery.

Spinning Rings.
Draper, Geo, & Sons, Hopedale, Mass.
Whitinsville Spinning Ring Co, Whitinsville, Mass.

Spinning Tubes.
Buckley, Benj's. Son, Gun Mill, Paterson, N. J.
Providence Machine Co, Providence, R. I.

Steam Boilers.
Sargent, J. Bradford, 8 Oliver St, Boston.

Steam Boiler Insurance.
Hartford Steam Boiler Inspection & Insurance Co, Hartford, Conn.

Steam Damper Regulators.
D'Este & Seeley Co, 29 Haverill St, Boston Mass.

Steam Engines.
Newburgh Ice Machine & Engine Co, Newburgh, N. Y.
Sargent, J. Bradford, 8 Oliver St, Boston, Mass.
Toomey, Frank, 131 N. 3d St, Phila, Pa.

Steam Kettles.
Walker & Pratt Mfg. Co, 31-35 Union St. Boston, Mass.

Steam Separators.
D'Este & Seeley Co. (Curtis), 29 Haverill St., Boston.
Goubert Mfg. Co, 14 Church St, New York.

Steam Specialties.
Argand Grate Bar Co, New York.
Goubert Mfg. Co, 14 Church St, New York.
Knowlton Packing Co, 19 Pearl St, Boston.
Simmons, John & Co, 106-110 Centre St, N. Y.

Steam Traps.
D'Este & Seeley Co. (Curtis) 29 Haverhill St, Boston, Mass. (return float and expansion).

Steel Castings.
Chester Steel Castings Co, 407 Liberty St, Phila, Pa.

Steel and Iron Roofing.
Chattanooga Steel Roofing Co, Chattanooga, Tenn.

Stop Motion for Looms.

Tucker Stop Motion Co., Hartford, Conn.

Tanks, Tubs and Vats.

Brabender, Chas, Sr, Paterson, N. J.
Burkhardt's, Geo. J., Sons, 2831 N. Broad St, Phila, Pa.
Caldwell, W. E, & Co, Louisville, Ky.
Corcoran, A. J, 11 John St, N. Y.
Cypress Lumber Co, Apalachicola, Fla.
Cypress Tank Co, Bridgeport, Florida.
Hall, Amos H, No. 2nd above Cambria, Phila, Pa.
Oat, Jos, & Sons, 232 Quarry St, Phila, Pa.
Woolford, George, 2240 No. 9th St, Phila, Pa

Tapes and Braids.

Eddy & Street, 11 So. Water St, Providence, R. I.
Fleming & Chapin, 215 Church St, Phila, Pa.
Kenyon, John J, Pawtucket, R. I.
Perseverance Mills, 2632-40 Mascher St Phila, Pa.
Witter, H. M. & Co, Worcester, Mass.

Teasels.

Kellogg, Thos. C, Skaneateles, N. Y.
Kellogg, Wm, W, Skaneateles, N. Y.
McLaughlin Bros, Skaneateles Falls, N. Y.

Temperature Regulators.

D'Este & Seeley Co, 29 Haverhill St, Boston.

Tentering Machines.

See Dyeing, Bleaching Machinery, Etc.

Tension Pulleys.

N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.

Testing Machines.

Howard, Geo. C., 1783 Barker St., Phila., Pa

Towers.

Caldwell, W. E, & Co, Louisville, Ky.

Traveler's Cheques.

American Express Company.

Turbines.

Burnham Bros, York, Pa.
Christiana Machine Co, Christiana, Pa.
James Leffel & Co, Springfield, Ohio.

Typewriters.

Wyckoff, Seamans & Benedict, 15 School St., Boston.

Valves.

D'Este & Seeley Co, 29 Haverhill St, Boston, Mass.

Ventilating Apparatus.

Berry, A. Hun, 23 W. 1st St, Boston, Mass.
New England Heating & Ventilating Co, Providence, R. I.
Philadelphia Textile Machinery Co, Hancock St, above Lehigh Ave, Phila, Pa.
Sargent's, C. G., Sons, Graniteville, Mass.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass.
Van Noorden & Co, Harrison Ave, Boston, Mass.

Warp Compressing Machine.

Worcester Warp Compressing Machine Co Worcester, Mass.

Watchman's Clock.

Hausberg, E. O, 41 Maiden Lane, N. Y.
Nanz & Co, 116 Chambers St, New York.

Water Wheels.

Burnham Bros, York, Pa.
Christiana Machine Co, Christiana, Pa.
Leffel, James, & Co, Springfield, O.

Water Wheel Governors.

Cohoes Foundry & Machine Co, Cohoes N. Y.
Leffel, James & Co, Springfield, Ohio.
Lombard Water Wheel Governor Co, 61 Hampshire St, Boston.
Replogle Governor Co, Akron, Ohio.

Winders. (Hosiery.)

Universal Winding Co, 226 Devonshire St, Boston.

Winding. (Silk, Cotton and Worsted).

Brown, Wm. J, 171 Wooster St, New York.

Wool.

Lyon, John H, & Co, 12 Reade St, N. Y.
Webb, Chas. J. & Co, 156 N. Front St. Phila, Pa.

Wool Cleaning Compound.

India Alkali Works, Boston.

Wool Cleaning Process.

International Safety Solvent Co., Providence, R. I.

Wool Combs.

Townsend, Thos, Manchester, Conn.

Wool Combing Machinery.

Crompton Loom Works, Worcester, Mass.

Wool Extracts.

Daly, Jas. E., & Co., 105 River St., Paterson, N. J.
Garfield Woolen Co, Garfield, N. J.
Muhlhauser, F, Co, Cleveland, Ohio.

Wool and Waste Dusters.

Gerry, Geo, & Son, Athol, Mass.
Sargents', C. G., Sons, Graniteville, Mass.
Stillman-Randall Machine Co, Westerly, R. I.

Woolen Machinery.

Altemus, W. W, & Co, 2816 N. 4th St, Phila Pa.
Atlas Mfg. Co., Newark, N. J.
Barker, James, cor. 2d and Somerset Sts., Phila, Pa.
Bethune, L. W, 128 Pearl St, New York.
Blaisdell Feeder Co, 29 Oliver St, Boston, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Furbush, M. A. & Son Machine Co, Phila, Pa.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Knowles Loom Works, Worcester, Mass.
McKerrow, H. G, & Co, 31 State St, Boston, Mass.
Parker, J. B, Machine Co, Clinton, Mass.
Sargent's, C. G., Sons, Graniteville, Mass.
Thun & Janssen, Reading, Pa.
White, John F, 38 River St, Providence, R. I.
Woonsocket Machine & Press Co, Woonsocket, R. I.

Wool, Hair and Noils.

Fowles & Co, 102 Church St, Phila.
Lyon, John H, & Co, 12 Reade St, N. Y.
Muhlhauser, F, Co, Cleveland, Ohio.
Webb, Chas. J, & Co, 156 N. Front St, Phila Pa.

Wool Shoddies.

Collings, Taylor & Co, Cleveland, Ohio.
Garfield Woolen Co, Garfield, N. J.
Muhlhauser, F, Co, Cleveland, Ohio.
Riverdale Woolen Co, Riverdale, Northbridge, Mass.

Wool Sorters and Scourers.

Duross, Theodore A, Kensington Ave. and Huntingdon St, Phila.
Kennebec Woolen Mills, 2025 Nandain St, Philadelphia, Pa.

Wool Washing, Preparing and Drying Machinery.

Sargent's, C. G, Sons, Graniteville, Mass.

Wool Waste.

Hollister Bros, 160 5th Ave, New York.

Yarns.

Carpet Yarns.

Fleming & Chapin, 215 Church St, Phila, Pa.

Colored Cotton Yarns.

Greene & Daniels Mfg. Co, Pawtucket, R. I.
Hadley Co, Holyoke, Mass.
Montgomery, J. R, Co, Windsor Locks, Ct.
Monument Mills, Housatonic, Mass.
Sanford Spinning Co, Fall River, Mass.
Sawyer, Manning & Co, 86 and 88 Franklin St, N. Y.
Tucker & Cook Mfg. Co, Conway, Mass.
Wilmington Mills Mfg. Co, Wilmington, Del.

Cotton Warps and Yarns.

Abegg & Rusch, 92 Grand St, N. Y.
Arkwright, Sir Rich, & Co, Ltd, 69 Mercer St, New York City.
Bale, Stuart & Co, 51 Green St, N. Y.
Clark, Wm, Co, Westerly, R. I.
Eddy & Street, 11 So. Water St, Providence, R. I.
Eichman & Sternberg, 488 Broadway, N. Y.
Fleming & Chapin, 215 Church St, Phila, Pa
Germantown Spinning Co, Germantown Pa.
Globe Yarn Mills, Fall River, Mass.
Grant Yarn Co, Fitchburg, Mass.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Hadley Co, Holyoke, Mass.
Hawes, O. S, & Bro, Fall River, Mass.
Holland & Webb, 487 Broadway, N. Y.
Howland Mills, New Bedford, Mass.
Kerr Thread Co, Fall River, Mass.
King, Alex, & Co, 54 Leonard St, New York City.
Lane, J. H, & Co, N. Y, Boston and Chicago
Mitchell, Jas. E, & Co, Boston and Phila, Pa.
Monument Mills, Housatonic, Mass.
New Bedford Mfg. Co, New Bedford, Mass.
North Athens Cotton Mills, Athens, Tenn.
Orswell Mills, Fitchburg, Mass.
Sampson, O. H, & Co, 67 Chauncy St, Boston, Mass.
Montgomery, J. R, Co, Windsor Locks, Ct.
Sanford Spinning Co, Fall River, Mass.
Sawyer, Manning & Co., 86-88 Franklin St.
Skerry, A. T, 47 Leonard St, New York.

Mohair Yarns.

Holland & Webb, New York.
Whiteside, James, 31 Wooster St, New York.

Ramie.

Holland & Webb, New York.
Sampson, O. H., & Co., 67 Chauncy St., Boston, Mass.

Silk Yarns.

Bale, Stuart & Co, 51 Green St, N. Y.
Champlain Silk Mills, Whitehall, N. Y.
Cheney Bros, S. Manchester and Hartford Ct.
Fleming & Chapin, 215 Church St, Phila, Pa.
Hawes, O. S. & Bro, Fall River, Mass.
Holland & Webb, 487 Broadway, N. Y.
Ryle, Wm, & Co, 54 Howard St, N. Y.
Silk Lour Mfg. Co, Putnam and Mascher Sts, Philadelphia, Pa.

Spun Silk Yarns.

Champlain Silk Mills, Whitehall, N. Y.
Eddy & Street, 11 So. Water St, Providence, R. I.
Whiteside, James, 31 Wooster St, New York.

Woolen and Merino Yarns.

Clasgens, The J. & H. Co, New Richmond, Ohio.
Eddy & Street, 11 So. Water St, Providence, R. I
Hollister Bros, 109 5th Ave, New York.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
King, Alexander & Co, 54 Leonard St, N. Y.
Mitchell, Jas. E. & Co, Boston, Mass, and Phila, Pa.
River Spinning Co, Woonsocket, R. I.
Rockwell, Edward M, Leominster, Mass.
Sawyer, Manning & Co, 86 and 88 Franklin St, N. Y.
Shimer, George, & Boyer, 516 Market St, Phila, Pa.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.

Worsted Yarns.

Abegg & Rusch, 92 Grand St, N. Y.
Alleghany Worsted Mills, Phila, Pa.
Bale, Stuart & Co, 51 Green St, N. Y.
Campbell, Geo, & Co, Phila, Pa.
Cranston Worsted Mills, Bristol, R. I.
Croft, Howland, & Sons, cor. Broadway and Jefferson St, Camden, N. J.
Eddy & Street, 11 So. Water St, Providence, R. I.
Eichman & Sternberg, 488 Broadway, N. Y.
Herbst & Jones, 21st and Naudain Sts, Philadelphia, Pa.
King, Alexander & Co, 54 Leonard St, N. Y.
Sawyer, Manning & Co., 86-88 Franklin St, N. Y.
Shimer, George, & Boyer, 516 Market St, Phila, Pa.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.
Trenton Worsted Mills, Trenton, N. J.
Whiteside, James, 31 Wooster St, New York.

Yarns, Threads, Etc.

Banding.

Covel & Osborn, Fall River, Mass.
Kenyon, John J, Pawtucket, R. I.
Moore, C. & Co, 12 S. 5th St, Phila, Pa.
Warren, W, Thread Works, Westfield, Mass.
Whittier Cotton Mills, Lowell, Mass.
Sawyer, Manning & Co, 86 and 88 Franklin St, N. Y.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.
Tucker & Cook Mfg. Co, Conway, Mass.
White, James F, & Co, N. Y. and Phila, Pa.
Whittier Cotton Mills, Lowell, Mass.

Gassed Yarns.

Greene & Daniels Mfg. Co, Pawtucket, R. I.
King, Alex, & Co, 54 Leonard St, New York.

Glazed Yarns.

Arkwright, Sir Rich, & Co, Ltd, 69 Mercer St, New York City.
Blodgett & Orswell, Pawtucket, R. I.
Fleming & Chapin, 215 Church St, Phila, Pa.
Kenyon, John J, Pawtucket, R. I.
Kerr Thread Co, Fall River, Mass, and 29 Mercer St, N. Y.
King, Alex, & Co, 54 Leonard St, New York.
Malcolm Mills Co, Frankford, Pa.
Warren, W, Thread Works, Westfield, Mass.
Whittier Cotton Mills, Lowell, Mass.

Harness Twines.

Bale, Stuart & Co, 51 Greene St, New York
Hadley Co, 95 Milk St, Boston, Mass.
Kerr Thread Co, Fall River, Mass, and 29 Mercer St, N. Y.
King, Alex, & Co, 54 Leonard St, New York
Moore, C, & Co, 12 S. 5th St, Phila, Pa.
Warren, W, Thread Works, Lowell, Mass.
Whittier Cotton Mills, Lowell, Mass.

Hosiery and Knitting Yarns.

Arkwright, Sir Rich, & Co, Ltd, 69 Mercer St, New York City.
Campbell, Geo, & Co, Phila, Pa.
Champlain Silk Mills, Whitehall, N. Y.
Clark, Wm. Co, Westerly, R. I.
Clasgens, The J. & H. Co, New Richmond, Ohio.
Croll, Albert Ivins, Boston, Mass.
Fleming & Chapin, 215 Church St, Phila, Pa.
Germantown Spinning Co, Germantown, Pa.
Globe Yarn Mills, Fall River, Mass.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Holland & Webb, 487 Broadway, N. Y.
Howland Mills, New Bedford, Mass.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Kerr Thread Co, Fall River, Mass.
King, Alex, & Co, 54 Leonard St, New York.
Lane, J. H, & Co, New York, Boston and Chicago.
Monument Mills, Housatonic, Mass.
New Bedford Mfg. Co, New Bedford, Mass.
Orswell Mills, Fitchburg, Mass.
Rockwell, E. M, Leominster, Mass.
Sampson, O. H., & Co., 67 Chauncy St., Boston, Mass.
Sanford Spinning Co, Fall River, Mass.
Sawyer, Manning & Co, 86-88 Franklin St, N. Y.
Shimer, George, & Boyer, 516 Market St, Phila, Pa.
Trenton Worsted Mills, Trenton, N. J.
Warren, W, Thread Works, Lowell, Mass.
Whittier Cotton Mills, Lowell, Mass.

Jute Yarns.

Lane, J. H, & Co, N. Y, Boston and Chicago
Whiteside, James, 31 Wooster St, New York.
Wilmington Mills Mfg. Co, Wilmington, Del.

Novelty Yarns, Tinsels, Silk Noils, Etc.

Cranston Worsted Mills, Bristol, R. I.
Holland & Webb, New York.
Malcolm Mills Co, 216 Chestnut St, Phila, Pa.

Alphabetical Index to Advertisements.

	page
Abegg & Rusch.	119
Alexander Bros.,	113
Allegheny Worsted Mills,	122
Aitemus, W. W. & Son,	12
American Card Clothing Co,	9
American Express Co.,	110
American Fire Brick Works,	86
American Fire Resisting Paint Co,	136
American Glutrose Co,	84
American Napping Machine Co.,	46
American Soap & Washoline Co.,	—
American Supply Co.,	130
American Tool & Machine Co,	—
Anchor Color Mfg. Co,	84
Ardrey, S. B, & Sons,	98
Argand Grate Bar Co,	104
Arkwright, Sir Richard, & Co., Ltd.,	120
Armitage Manufacturing Co,	136
Arnold, Peck & Co,	84
Ashley, T. C, & Co,	86
Ashman, S. A.,	95
Ashworth, Elijah,	139
Atherton Machine Co.,	8
Atlas Mfg. Co.,	8
Atteaux, F. E., & Co ,	83
Bale, Stuart & Co.,	119
Barlow, John W.,	—
Bay State Dyeing & Finishing Co,	126
Beach & Co.,	83
Berlin Iron Bridge Co.,	Back Cover
Berry, A. Hun,	85
Bethune, L. W,	6
Birch Bros.,	89
Bischoff, C., & Co.,	83
Blaisdell, P., & Co.,	128
Blaisdell Feeder Co,	132
Blaisdell, The S. Jr., Co.,	116
Bosson & Lane,	83
Boston Finishing Works,	126
Brabender, Chas., Sr.,	89
Branson Machine Co,	103
Breedon, Wm., & Son,	99
Brinton, H., & Co.,	90
Brophy, T.,	126
Buckley's Benj , Son,	131
Burkhardt's, Geo. J , Sons,	87
Burnham Bros.	139
Burr Patent Index Co.,	136
Butterworth H. W. & Sons Co.,	1
Byram, F. A,	94
Campbell, Geo, & Co,	122
Campbell & Clute,	94
Capelle, Herman,	116
Champion Sewing Machine Co.,	93
Champlain Silk Mills,	124
Chester Steel Casting Co ,	127
Chicago Raw Hide Mfg. Co,	112
Christiana Machine Co,	139
Clark, The William. Co,	120
Clasgens, The J. & H. Co,	127
Cohoes Foundry & Machine Co.,	133
Cole Bros.	125
Collings, Taylor & Co,	—
Corcoran, A. J.,	88
Corey, S. J.,	84
Corey, Wm., Co.,	99
Crane Mfg. Co.,	95
Cranston Worsted Mills,	122
Crawford, J. J. & Son.,	—
Creason, Geo. V,	111
Croft, Howland, Sons & Co,	121
Croll, Albert Ivins,	121
Crompton Loom Works,	7
Crosby & Gregory,	11
Curtis & Marble Machine Co.,	9
Cypress Lumber Co,	87
Cypress Tank Co,	87
Dale Extract Co,	87
Dalrymple, Geo,	107
Daly, James E.,	121
Danforth Belting Co.,	113
Designer,	98
D'Este & Seeley Co.,	108
Dixon, Jos., Crucible Co.,	105
Dolge, Alfred.	131
Dominion Coal Co, Ltd,	108
Draper, Geo., & Sons,	3
Duckrow, R. A,	—
Durose, Theo. A.,	125
Easton & Burnham Machine Co.,	—
Eddy & Street,	—
Eichman & Sternberg,	127
Elliot & Hall,	133
Excelsior Knitting Machine Co,	92
Fairmount Machine Works,	46
Farbenfabriken of Elberfeld Company,	81
Fell, Geo., & Son,	121
Ferguson, John W.,	Back cover
Fitchburg R. R.	137
Fleming & Chapin.	94
Fowles & Co.,	125
Frame, Gibbons,	94
Friedberger, C.	102
Furbush. M. A. & Son Machine Co,	46
Garfield Woolen Co.,	—
Geisenheimer & Co,	Outside Back Cover.
General Electric Co.	105
Germantown Spinning Co.,	116
Gerrish Wool & Leather Co.,	121
Gerry, Geo. & Son,	7
Gilbert Loom Co.,	7
Globe Yarn Mills,	114
Goetz, O,	133
Goubert Mfg. Co,	138
Gowdey, J. A, & Co,	130
Granger Foundry & Machine Co.,	Front Cover.
Grant Yarn Co.,	118
Graves Elevator Co.,	109
Greene & Daniels Mfg. Co.,	118
Greenwood, R., & Bault,	126
Hadley Co.,	120
Hall, Amos H.,	86
Hand, Frederic, & Co.,	130
Hausburg, E. O,	109
Hartford Steam Boiler Inspection & Insurance Co.,	106
Harway Dyewood & Extract Co.,	83
Hawes, O. S., & Bro.,	117
Heffron, H. K, & Co,	137
Hepner & Horwitz,	100
Hepworth & Co.,	95
Herbst & Jones,	119
Hill's, Edward, Son & Co.,	83
Hill, Jas., Mfg. Co.,	—
Hodgson & Holt Mfg. Co,	95
Hodson, John M.,	118
Holbrook Mfg. Co.,	128
Holland & Webb,	119
Hollister Bros,	Back Cover.
Home Bleach & Dye Works,	126
Horsfall, Jonathan.	83
Howard, Geo. C.,	109-131
Howard & Bullough Am. Machine Co.,	5
Howland Mills Corporation,	116
Hyde, Edward S.,	124
Illinois Central R. R,	137
Imperial Chemical Co.,	107
India Alkali Works,	133
International Safety Solvent Co.	10
Ives, Loyal T.	99
Jaeck, J., Bros.,	81
Janney, O. S., & Co.,	82
Jenckes, E., Mfg. Co.,	97
Johnson, Chas. A., & Co.,	83
Johnson, Wm. G, & Co,	82

	page
Jones, Lewis	95
Kalbfleisch, Edward L, & Son,	82
Kalbfleisch, Franklin H, Co, Outside Back Cover	
Kalle & Co.,	82
Keller, John J., & Co.,	82
Kellogg, Thos. C.	46
Kellogg, Wm. W.	46
Kennebec Woolen Mills,	125
Kennedy, Thos,	100
Kenyon, John J.,	—
Kerr Thread Co.,	119
Keystone Automatic Napping Mch. Co,	98
Kilburn, Lincoln & Co.,	125
King, Alex'r & Co.,	117
Klipstein, A, & Co., Back Cover	
Knowles Loom Works,	8
Knowlton Packing Co,	111
Koechl, Victor, & Co,	81
Krout & Fite Mfg. Co.,	94
Lane, J. H., & Co.,	117
Leffel, James, & Co,	107
Leigh, Evan Arthur,	12
Leighton Machine Co.,	94
Lincoln & Co.,	89
Lombard Water Wheel Governor Co.,	—
Loom Picker Co., Biddeford,	—
Lord, Geo. W.,	108
Lydall, H., & Foulds,	99
Lyon, John H. & Co.,	—
Malcolm Mills Co.,	120
Mason Machine Wks.,	9
Matheson, & Co., Wm. J.,	81
Mavo Knitting Machine Co.,	135
McCalvey Elevator Works,	109
McKerrow, H. G, & Co.,	8
McLaughlin Bros.,	46
Merrow Machine Co.,	96
Mitchell Jas. E., & Co.,	118
Montgomery, J. R., Co.,	120
Monument Mills,	118
Moore, C., & Co.,	121
Mueller, A,	93
Muhlhauser, The F. Co,	123
Munson, Chas., Belting Co.,	104
Nanz & Co,	113
Naumkeag Dye Co.,	84
New Bedford Copper Co.,	89
New Bedford Mfg. Co.,	116
Newburgh Ice Machine & Engine Co,	106
New England Ventilating & Heating Co.,	86
North American Metaline Co.,	105
North Athens Cotton Mills,	119
Novelty Loom Picker Works,	7
Nye & Tredick,	90
Oakdale Dye Works,	126
Oakes Mfg. Co,	84
Oat, Joseph, & Sons,	86
Orswell Mills,	118
Palmer, John S.,	100
Parker, J. B., Machine Co.,	9
Parks & Woolson Machine Co.,	42
Pawtucket Dyeing & Bleaching Co.,	126
Paxton & O'Neill,	90
Pearson, J. T.,	96
Pepper Mfg. Co.,	92
Phenix Iron Foundry,	89
Philadelphia Textile Machinery Co.,	98
Philadelphia Textile School,	100
Pickhardt, Wm. & Kuttroff,	—
Polhemus, Henry,	85
Popham, Henry, & Son,	—
Providence Machine Co.,	9
Quilter, James H,	100
Replogle Governor Works,	106
River Spinning Co,	122
Riverdale Woolen Co,	126
Rockwell, E. M.,	119
Rockwell, W. S, & Co,	135
Roessler & Hasslacher Chemical Co,	67
Russell, Albert C.,	113
Ryder, J. J., Co.,	136
Ryle, William, & Co.,	124
Saco Water Power-Machine Shop	12
Salem Foundry Machine Shop,	109
Sampson, O. H., & Co.,	117
Sanford Spinning Co.,	114
Sargent's, C. G., Sons,	—
Sargent, J. Bradford,	104
Sawyer, Manning & Co.,	117
Schofield, Geo. L.,	131
Scott & Williams	91
Sharpless Dyewood Extract Co.,	82
Sheldon, J. D. & Co.,	113
Silk Lour Mfg. Co,	124
Simmons, John & Co,	12
Skerry, A. T, & Co,	123
Smeallie Bros,	106
Solis, Andrew J. Jr., & Co.,	120
Southwick, Geo. W., & Co.,	106
Stafford & Babcock,	96
Stamford Mfg. Co.,	81
Standard Machine Co.,	101
Stanton & Lewis,	99
Star Needle Co.,	99
Stillman-Randall Machine Co.,	131
Sturtevant, B. F. Co., Inside Back Cover	
Sykes & Street,	81
Taylor, James,	96
Thun & Janssen,	136
Thurston, A. G. & Son,	—
Toomey, Frank,	136
Torrance Mfg. Co,	—
Townsend, Thomas,	128
Treat, Orion,	99
Trenton Worsted Mills,	117
Tucker & CookMfg. Co.,	119
Tucker Stop Motion Co,	—
Universal Winding Co.,	10
Van Noorden, E, & Co, Back Cover	
Victor Mfg. Co.,	105
Walder, J.,	130
Walker & Pratt Mfg. Co.,	84
Wardwell Needle Co.,	99
Warren, W., Thread Works,	116
Warren Chemical Co, Outside Back Cover.	
Watson, A.,	105
Watts Regulator Co,	111
Webb, Chas. J. & Co.,	125
White, James F. & Co.,	118
White, John F,	133
Whitin Machine Works,	2
Whitinsville Spinning Ring Co.,	130
Whiton D. E. Machine Co.,	128
Whittier Cotton Mills,	118
Wildman, Joseph, & Co,	86
Williams, J,	136
Wilmington Mills Mfg. Co,	80
Winslow Bros.,	—
Witter, H. M, & Co,	116
Woodin, Geo. R,	136
Woolford, George,	86
Woonsocket Machine & Press Co,	4
Woonsocket Napping Machine Co,	131
Woonsocket Shuttle Co,	11
Wyckoff, Seamans & Benedict,	135

THE WILMINGTON MILLS MFG. CO.

MANUFACTURERS OF **JUTE GOODS,**

CARPET FILLING AND RUG YARNS,

Wrapping, Baling, Tobacco, Hop and Wool Twines. Cords, Ropes, Packing and Specialties

WILMINGTON, DEL.

VICTOR KOECHL & COMPANY,

Successors to Schulze-Berge & Koechl,

79 MURRAY ST., NEW YORK.

Sole Agents for the **ANILINE COLORS AND ALIZARINES**

Made by FARBWERKE, formerly MEISTER, LUCIUS & BRUENING, HOECHST a/M.

FAST COLORS for Wool, Yarn and Piece-Goods Dyeing, and Calico Printing.

Branch Offices: 138 Milk St., BOSTON, 39 N. Front St., PHILADELPHIA, Pa.

STAMFORD M'F'G CO.,

133, 135, 137 FRONT ST., NEW YORK.

MANUFACTURERS OF

DYEWOODS and DYEWOOD EXTRACTS,

LIQUORS AND FLAVINES.

Importers of Chemicals and Dyestuffs.

JAECK BROS,

62-68 North 11th St., Brooklyn, N. Y.

Extracts of Indigo, Indigo Carmine, Indigotine, Gendarme Blue, Refined and Reduced Indigo, Dressings and Finishings,

Bisulphite of { Soda, Chrome, Iron.

Alizarine Assistant, Sulphoricinate, Soaps.

Cutch & Gambier Extracts, Indigo Substitute, Steam Black, Acetate of Chrome, Chlorogen, Sucrosine, Peroxyde of Hydrogen.

All products guaranteed strictly pure.

Fast Blacks FOR WOOL

NAPTHOL BLACKS, ALIZARINE BLACKS, NAPTHYL BLUE BLACKS. } *Patented.*

Manufactured by L. CASSELLA & CO.,

Sole U. S. and Canada Agents, WM J. MATHESON & CO., Ltd.,

NEW YORK, BOSTON, PROVIDENCE, PHILA., CHARLOTTE, N. C., MONTREAL, CANADA.

FARBENFABRIKEN OF ELBERFELD COMPANY,

77 WILLIAM ST., NEW YORK.

16 Hamilton St. Boston. 11 North Front St. Phila. 161 Kenzie St. Chicago

Sole Importers of ALIZARINE AND ANILINE COLORS

Manufactured by

FARBENFABRIKEN vormals FRIEDR. BAYER & Co., Elberfeld and Barmen, Germany.

Sole agents of the Hudson River Aniline Color Works. ALBANY, N. Y.

SYKES & STREET,

New York. Boston. Philadelphia.

Sole U. S. Agents for

"COEZ"

FRENCH DYEWOOD EXTRACTS.

Established 1834. H. G. JOHNSON, Proprietor.

Wm. G. Johnson Co.

Manufacturers of

DYEWOODS Logwood Extracts, - - -
Ground and Bolted Camwoods
And other Fancy Woods. -

All Goods Warranted Uniform.

Long Distance Telephone. UNCASVILLE, CONN.

JOHN J. KELLER & CO., 104-106 MURRAY ST., NEW YORK.

Sole Agents for JOHN R. GEIGY & CO., Basle, Switzerland.

Aniline Colors, Dyewood Extracts, Etc.

Cotton Printing Specialties, Fast One Dip Cotton Colors, Fast Wool Colors.

220 Church Street, Philadelphia. } Branch Houses: { 153 Milk Street, Boston.

ESTABLISHED 1863.

KALLE & CO.

Manufacturers of Aniline Colors, BIEBRICH ON RHINE, GERMANY.

77 JOHN STREET, NEW YORK.

PHILADELPHIA, 115 & 117 South Front Street. BOSTON, 463 Atlantic Avenue.

EDWARD L. KALBFLEISCH & SON, Manufacturers and Importers,

56 and 58 Pine St., New York. ACIDS, CHEMICALS AND DYE STUFFS.

Bleaching Powder, Dye Woods, Dye Wood Extracts, Glauber's Salt, Oil Vitrol, Soda Ash.
WRITE FOR QUOTATIONS.

THE SHARPLESS DYE-WOOD EXTRACT CO.,

OFFICES: 648, 650, 651 The Bourse, PHILADELPHIA.
Warehouse: 22 N. Front St., PHILADEDPHIA. Works: CHESTER, PA.

—MANUFACTURERS OF—

DYEWOODS AND EXTRACTS.

LOGWOOD.
FUSTIC.
BARK
CUTCH

O. S. JANNEY & CO.

IMPORTERS OF

INDIGO, CUTCH, GAMBIER, SICILY SUMAC, TUMERIC, CHINA CLAY, Etc.

AND DEALERS IN

Dyestuffs, Extracts and Chemicals.

AGENTS FOR

WATSON, WALKER & QUICKFALL, Ltd., Leeds, Eng., - - - EXT. INDIGO, ARCHIL AND CUDBEAR.
BALTIMORE CHEMICAL CO., - - - MORDANTS AND COLORS FOR DYERS, CALICO PRINTERS, ETC.
TRELAVER CHINA CLAY AND CHINA STONE WORKS CO., } England, CLAYS FOR POTTERS AND
MID CORNWALL CHINA STONE AND CLAY CO., Ltd., } PAPER MAKERS.
AMERICAN GLUCOSE CO., Buffalo, N. Y., - - - - - - CORN STARCH.
SCHILL & SEILACHER, Stuttgart, Germany, ANTIMONY SALTS.

No. 70 Kilby St., Boston, Nos. 8 & 10 Letitia St., Phila,

C. BISCHOFF & CO.,

87 and 89 Park Place, New York. Branches, 110 Walnut St., Phila. 104 Broad St., Boston.

Aniline and Alizarine Colors, Dyestuffs, Chemicals,

ANILINE OILS AND SALTS.

LATEST SPECIALTIES.

Cresylblue, OB pat'd. " BB " " RR " Cresylviolet " } For Cotton: absolutely fast to Sunlight.

Thio Veranvine, BB. " Brown, BB. " Yellow, R. " Orange, G. } One dip for cotton and mixed goods, wool and cotton silk and cotton.

Naphtazine Blue (Pat.)—a fast acid Navy Blue for Wool.

FAST DIRECT BLUES, Pat'd. for Cotton and Mixed Goods. Wool and Cotton, Silk and Cotton.

FAST DIAZOTABLE BLACKS, PAT'D.

BOSSON & LANE,

ANTI-CHLORINE FOR BLEACHING COTTON. NO ACID. NO SOAP.

Dyestuffs, Chemicals and Aniline Colors.

36 CENTRAL WHARF, BOSTON, MASS.

CHAS. A. JOHNSON & CO.,

Successors to J. C. Bloomfield & Co.

Dealers in

Dyestuffs & Textile Trade Supplies.

Detergent for Bleaching, a substitute for soda ash, a specialty.

22 Dey Street, New York.
29 Weybosset St., Providence, R. I.

JONATHAN HORSFALL

AGENT FOR

Fankhausine,

Avery's Lactic Acid 30°.

Dealer in Anilines and Extracts, etc.

229 Chestnut Street, Philadelphia.

Office and Salesroom, 174 & 176 Purchase St. BOSTON.

F. E. ATTEAUX & CO.

Works, W. First, D & Cypher Sts. SO. BOSTON.

MANUFACTURING CHEMISTS.

Importers of Aniline, and Alizarine Colors, Dyestuff and Chemicals.

Inventors and Manufacturers of Specialties for Wool, Cotton Silk and Leather Dyers.

Our wellknown specialties can ONLY be furnished by us or through our authorized agent, W. W. Hanna, 135 No. Water St., Phila

BEACH & COMPANY,

Hartford, Conn., and 372 & 374 Atlantic Ave., Boston, Mass.

Proprietors GROVE WORKS DYEWOOD MILLS.

Agents British Alizarine Co., Brooks, Simpson & Spiller, Anilines, Edward Muckslow's Dyeing Extracts, J. R. G. Cochineal, Etc.

EDWARD HILL'S SON & CO.,

25 & 27 Cedar Street, New York.

Caustic Potash, Calcined Carb. Potash.

HILL'S "A" CUTCH,

OXALIC ACID, SHELLACS, ARSENIC, CEYLON AND COCHIN COCOANUT OIL.

Sole Agents in the United States for THE UNITED ALKALI CO.'S BRANDS OF CAUSTIC SODA.

F. G. PAULY, Pres. I. J. MERRITT, Vice Pres. I. J. MERRITT, Jr., Treas.

Harway Dyewood & Extract Manufacturing Co.,

MANUFACTURERS OF

DYEWOODS, DYEWOOD EXTRACTS and LIQUORS, HAEMATINE

ONE DIP BLACK DYE, CUTCH EXTRACT.

Importers of Indigo, Cutch, Madder, Chemicals, &c.

WORKS: FLUSHING, L. I. 184 Front St., NEW YORK.

OAKES MANUFACTURING CO.,

Manufacturers and Importers of

Pure Extracts of Dye Woods and Dye Liquors,

58 STONE & 93 PEARL STS., NEW YORK.

Boston, 58 Pearl St. Atlanta, 128 Marietta St. Philadelphia, 113 Chestnut St.

Archil, Fustic, Sumac, Hypernic, and Cutch Extracts.

Genuine Hematine, Either Liquid, Paste or Solid

GLUTROSE.

Glutrose Sizing will effect a saving of 20% to 30% of Starch. Warps sized with this Compound resist atmospheric changes and the goods leave the loom in a finished condition.

Glutrose Core Compound makes excellent cores of burnt sand and is the cheapest and best Core Compound ever put on the market.

Finishing Glutrose will make the best of paste with common wheat flour and save money on flour bills.

Manufactured by AMERICAN GLUTROSE WORKS.

Office: Penn Mutual Building, - 925 Chestnut Street, - PHILADELPHIA, PA.

ANCHOR COLOR MFG. CO.

464-66 Cherry St. NEW YORK.

Genevan Blue "C" { bright, fast color, specially adapted for Hosiery goods.

Lactic Acid, { free from adulteration. Does Not Strip.

Anilines and Alizarines, { Genevan Blue, Anatase Blue, Genevan Brown, Cotton Warp Blue.

S. J. COREY

Dyestuffs and Chemicals, Fast Colors for Cotton, Wool and Silk, Shades Matched. Full particulars on application. Nubian One-dip Fast Black for Woolens. Lion Improved Ammoniated Potash Wool Scourer, Alizarine and Hematine Mordants, Etc.

773 Congress Street, Boston, Mass.

AT LAST Union Goods and Hosiery made of Cotton and Wool in any proportion can be dyed a good serviceable Black in One Operation with the

Save Time, Labor, Steam, Trouble and Expense of Speck Dyeing.

Naumkeag One-Dip Black Dye.

Competent man sent free of expense to start you up. Address,

NAUMKEAG DYE COMPANY, - Salem, Mass.

Samuel L. Peck.
Edward E. Arnold.
William H. Hoffman.

ARNOLD, PECK & CO.

ESTABLISHED A. D. 1815.

Successors to Mason, Chapin & Co.

MANUFACTURERS AND IMPORTERS OF

Indigo, Archil, Olive Oil, Cutch,

— AND —

ALL DYESTUFFS For Printers, Bleachers, Dyers, and Manufacturers

Special attention given to Starches, Gums, and materials for starching, softening, and finishing all fabrics.

WOOL SCOURING POWDERED POTASH.

Works at DIGHTON, MASS. Sole agents for The Mathieson Alkali Works, Saltville, Va.

Providence, R. I. New York, N. Y. Boston, Mass.

Seamless Cast Iron Steam Kettles,

Cast in one piece. No leaking. No boiling over. No waste of steam. Sizes 6 to 200 gallons. Send for Circular "S."

WALKER & PRATT MFG. CO.,

31-35 Union Street, Boston, Mass.

—Edward L. Kalbfleisch & Son, 56 and 58 Pine St., New York City, is one of the very old houses for which the trade in acids, chemicals and dyestuffs is so conspicuously noted. The Messrs. Kalbfleisch having been trained in this business from boyhood and personally experienced in and conversant with every detail and requirement are now among the largest manufacturers of acids, and are besides actively engaged in the importing of chemicals and dyestuffs. The extensive works are located at Brooklyn, N. Y., and at Bayonne, N. J., while their offices are, as stated above, on Pearl St., in the centre of the district given up to this line of trade. In the line of acids they do a large export business.

—Not so very many years ago California-made blankets had a well earned reputation in Eastern as well as Western markets, but with adverse conditions, the old Pioneer mill, which was one of the leading factories in this line, has been obliged to go out of business. After various vicissitudes, they were obliged to shut down two years ago because, with the high wages they had to pay, and the loss of protection under the Wilson tariff, they were unable to compete. The machinery has recently been sold for shipment to Japan, where cheap labor can make it profitable.

—The sheep men on the Pacific Coast are in a bad way. The price of wool is so low that thousands of pounds are now lying stored on the ranches and central depots, because at present prices it hardly pays the cost of transportation to a market where at the present time there is little or no demand for it.

—We understand that some of the ribbed goods made on Charles Cooper's new spring needle machine are on the market, and have met with a very good reception.

—Franklin H. Kalbfleich Co., the well-known dealers in acids and chemicals, 80-82 Williams St., New York, are distributing to the trade some unique paper weights made in the shape of miniature carboys.

—The work of the contractors on Siegel, Cooper & Co.'s immense new department store on Sixth Avenue New York, is rapidly nearing an end, and it is expected that the complete structure will be turned over to the firm early in September. While no exact policy as to the general class of goods to be handled by Siegel, Cooper & Co. has been officially outlined by the firm, it is to be inferred from the stocks already ordered by their various buyers, that both a fine as well as a popular class of customers will be catered to. It will be the largest store in New York.

—An agent for cotton and woolen machinery, who represents foreign as well as domestic builders, writes us that he is making some sales, but has been obliged to decline orders for certain classes of foreign machinery, through the inability of the builders to make shipments, on account of the great demand. He remarks, "I received an order through your esteemed journal this week, amounting to $800 for some American machinery."

HENRY M. POLHEMUS,

Successor to Gridley & Co.,

BROKER AND MANUFACTURERS' AGENT.

ACIDS, CHEMICALS, DYE STUFFS, ETC.

66 Maiden Lane, New York.

HERE IT IS!

WHAT? WHY! Just what you have been looking for,

THE GREATEST **Air Mover** on the American Market.

The Berry Wheel,

MANUFACTURED BY

A. HUN BERRY, 23 West First St., BOSTON, Mass.

THIS IS NO NEW THING. It has been fully demonstrated during the past ten years that this Wheel has no equal for moving Air (hot or cold), Smoke, Steam, Dust, Gases, Fumes of Acids, or anything that floats in the air. For Drying all kinds of products, Wool, Cotton, Glue, Yarn, Cloth, Hair, Leather, Book and Leather Board, etc.

BY OUR METHOD of applying this Wheel and handling the Air, we are prepared to remodel any make or kind of Dryers, and guarantee to increase their drying capacity from 25 to 50 per cent.

We have no long list of testimonials to offer. Anyone can get them. **THEY COST NOTHING**, but we can with perfect confidence refer you to **any or all** of our customers.

Mill Ventilation
Drying
Removing Steam } ARE OUR SPECIALTIES.

POSITIVELY this Wheel has no **BACK DRAUGHT**, and is the only Wheel that discharges evenly over the whole surface of the Wheel.

THERE'S ONLY ONE.

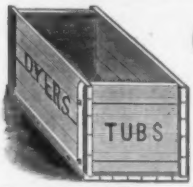
AMERICAN FIRE BRICK WORKS.

Richard C. Remmey & Son.

REMMEY'S GAS RESISTING BRICKS,
FOR BOILER SETTINGS,
REMMEY'S SULPHUR FUME RESISTING BRICKS,
FOR STACKS.

Man'f'rs of Fire Brick, Blocks and Tiles.

2637-59 CUMBERLAND ST., PHILADELPHIA.



AMOS H. HALL,

Cedar Vat and Tank Factory.

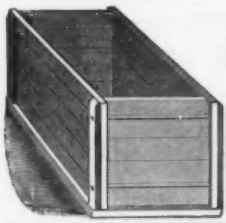
MANUFACTURER OF

All kinds of **VATS AND TUBS** used by Dyers, Bleachers, Mills, Factories, etc.

ESTIMATES SOLICITED.

North 2d Street, above Cambria Street,
PHILADELPHIA.

Down Town Office, 140 Chestnut Street. Hours, 12 to 1.

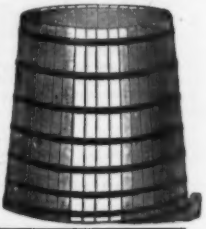


GEORGE WOOLFORD,

Cedar Tank and Vat Factory,

2240-44 N. Ninth St., Philadelphia.

Dye-Tubs, Water Tanks, Wash Boxes, Bleaching Tubs, Blue Vats, Boiling Keirs, etc. **RESERVOIR TANKS**, any capacity or shape, for factories, dwellings villages, farms, etc. **Please send for Estimate, and we will Guaranteed Satisfaction.**



Established 1788.

JOSEPH OAT AND SONS,

232 Quarry Street, PHILADELPHIA, PA.

MANUFACTURER OF

Copper Dye Vats, Vacuum Pans,
Steam Cylinders, Logwood Extractors,

And all kinds of copper work used in dyehouses and chemical laboratories

---

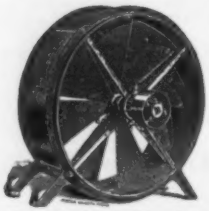
1908
N. FRONT ST.
PHILADELPHIA
PA.
JOSEPH
WILDMAN
MANUFACTURER OF

DYER'S CLOGS

T. C. ASHLEY & CO.
Importers and Manufacturers of
DYE STUFFS AND CHEMICALS.
145 Milk Street,
Works at Walpole, Mass. BOSTON.
Telephone 1580.

NEW ENGLAND

Ventilating and Heating Company.



From 1 to 6 ft. in Diameter.

Our system of Ventilating and Drying by air circulation will improve quality and increase production.

PLANS AND ESTIMATES ON APPLICATION.

OFFICE AND WORKS:

926, 928 and 930 Manton Avenue, Providence, R. I.

Warper Breakage.

The detail of cotton mill operation has assumed a much more scientific nature during recent years, and our modern managers keep far stricter watch over quality of product than formerly.

It has always been customary in well regulated mills to test the yarn for breaking strength at suitable intervals, but such a method at the best is limited for accuracy to the few bobbins or cops that undergo examination.

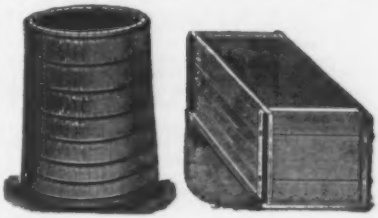
What is really needed is a suitable method of keeping an accurate daily record of all the yarn produced in the mill if possible. So far as filling yarn is concerned, there is probably no better method than that now in use. Warp yarn can be better inspected as it all passes through the warpers, where its quality can easily be watched. A certain number of ends always break at the warper, and the daily average will show quite accurately the quality of warp yarn being produced in the mill.

Herman F. Straw, agent of the Amoskeag Mfg. Co., whose inventions in other directions are well known to cotton mill managers, has taken advantage of the warping process, to record the number of breakages in the warp by attaching an indicator to the machine which operates every time an end breaks, showing on a dial the exact total at any period. This idea has been patented by him, and Geo. Draper & Sons, Hopedale, Mass., now control its introduction. The idea has already received the test of use, and there is no question about its advantage. Further particulars may be obtained by addressing the Draper company.

— W. C. Turner, for several years connected with the sales department of the Babcock & Wilcox Co., in New York, has resigned his position with that company to associate himself with the Aultman & Taylor Machinery Co., of Mansfield, Ohio, in their Cahall sales department.

ESTABLISHED 1840.

GEO. J. BURKHARDT'S SONS'



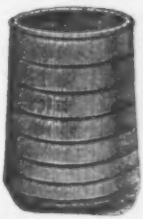
Cedar Tank Factory,

2831 to 2839 North Broad St.,

PHILADELPHIA, - PA.

CYPRESS TANKS AND VATS

The Cypress Lumber Co.



CYPRESS TANK . . . FACTORY.

APALACHICOLA, FLORIDA.

JAS. E. DALE, President. ..THE.. CARL BERINGER, Sec'y and Treasurer.

DALE EXTRACT COMPANY,

Manufacturers of

Fustic Extracts,
Persian Berry Extracts,
Logwood.

Specialties.

Office and Factory, RAHWAY, N. J.

AGENTS

W. A. PRIEST, 14 Central Wharf, Boston.
WHITTON EVENS, 9 Front St., Philadelphia.

Facts and Gossip.

—CALIFORNIA, San Francisco. The machinery in the woolen mill at the foot of Van Ness Ave. is being boxed up, preparatory to shipping it to Yokohama, its ultimate destiny being the woolen mills of H. Goto, five miles distant by rail from the city of Tokio. This machinery has been idle for a long time, and the price paid for it was about $6000.

—MARYLAND, Hagerstown. Wm. Ball, a silk manufacturer of Paterson, N. J., has purchased the silk plant of the Maryland Silk Co., and has contracted to have the ribbon loom and other machinery removed to his new mill in Paterson.

—MASSACHUSETTS, New Bedford. We have a report that the New Bedford Cordage Co. will close their plant permanently, and that the machinery is now being removed.

—MISSOURI, St. Louis. The M. Posnansky Hosiery Co. has been incorporated here with a capital stock of $5000, of which $4800 has been paid in. The incorporators are Simon Epstein, Rosa Posnansky and Max Posnansky.

—MISSOURI, St. Louis. The M. Passyarsky Hosiery Co. has been incorporated. Capital stock $50,000.

—NEW JERSEY, Paterson. A company to be known as the Lincoln Silk Co. has been incorporated for the purpose of continuing the manufacturing business of Joseph C. Paterson. They have an authorized capital of $25,000, of which $5000 has been paid in. Mr. Paterson is the principal stockholder.

—NEW YORK, Sand Lake. The sale of the Kane Mill has been postponed until Aug. 27th.

—NEW YORK, Schenectady. The plant of the Empire State Knitting Co., which recently failed, has been disposed of at public auction. The stock and mill supplies on hand were also disposed of at auction. The mill property, consisting of a tract of land, buildings, water power and an 8 set plant, was purchased by John Myers, of New York, for $43,000. The stock on hand, mill supplies, etc., brought about $32,000.

—NEW YORK. The Bradford Mills Co. has been incorporated for the purpose of manufacturing and dealing in dress fabrics in New York City; capital $2000. The directors are William A. Brewer and S. B. Short, of New York City, and R. F. Schaen, of Yonkers.

—NORTH CAROLINA, Charlotte. H. J. McLaurin and Harry P. Johnston have leased a building, and will equip the same with machinery for manufacturing collar pads. The machinery has been ordered.

—PENNSYLVANIA, Bethlehem. The Cutter Silk Mfg. Co., together with the stock of spool and sewing silk in New York, Boston and San Francisco, have been purchased by Gudebrod Bros. Co., of New York, who will continue the mills in operation.

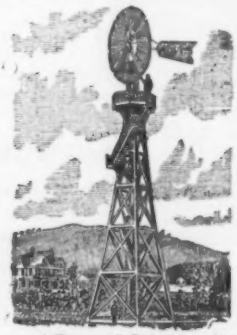
—PENNSYLVANIA, Bristol. The damage done by the cyclonic wind storm that recently visited this place to the carpet mills of Thomas L. Leedom & Co., is considerable. The damage to the building, which is owned by the Bristol Improvement Co., amounts to about $2000. The loss on stock and damage to machinery will, in all probability, exceed the damage to the mill.

—PENNSYLVANIA, Philadelphia. T. A. Birkin & Co., the English lace makers who recently bought the Mineola Curtain Mills from Rowland & Schmidt, are now operating the same with 110 hands.

—PENNSYLVANIA, York. A report states that the Compton Dye Works, of Harrisburg, will establish a plant in this city some time in August.

—RHODE ISLAND, North Scituate. Moswansicut Mfg. Co. has been incorporated. It has heretofore been a partnership business. The incorporators are Robert F. and William Adams of New York, and Chas. A. Sweet of Phenix, R. I. The capital stock is $100,000.

—RHODE ISLAND, Providence. A charter has been granted to the Standard Mill Supply Co., with a capital stock of $100,000. The corporation is at present composed of Henry C Clark, Rufus B. Goff and Edward L. Mitchell, men who have been associated for many years with Brown Brothers & Co., of this city. They will manufacture and sell mill supplies.



Office and Salesrooms:

11 John St., N. Y. City.

Factory:

Jersey Avenue and 13th Street, JERSEY CITY.

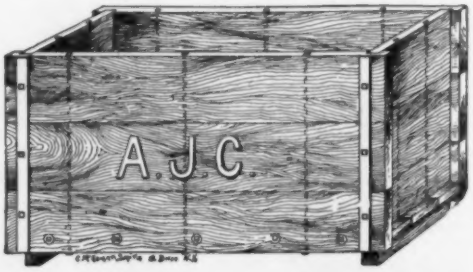
Telephone 238 Jersey City.

CORCORAN'S Tanks, Vats & Dye Tubs are Perfect

Of either Cedar or Oak, Pine or other woods. Bands fitted with **Adjustable Lugs** and **Draw Rods** with friction plates. Over 200 sizes. Send for information.

STORM DEFYING WIND MILLS.

Most durable, always satisfactory. They are working in every country on earth.



CHAS R EARLE, Pres and Treas. M. W GARDINER, Jr., Sec'y
AMOS. W C ARNOLD, Agent

PHENIX IRON FOUNDRY, Providence, R. I.

Manufacturers of

Calenders, Starch Mangles, Calender Rolls of Paper, Cotton and Husk,

Bleaching AND Dyeing Machinery

Printing Machines, Shafting, Pulleys, Gearing, Hydraulic Presses, Tenter Drying Machines, Ageing Boxes, Expansion Pulleys, Hollingworth Automatic Feed, Can Drying Machines, Grate Bars, Cloth Cutting Machines, Silk, Lace and Cotton Finishing Machinery,

and Sole Manufact'rs of **NAGLE POWER FEED PUMP.**

Send for Catalogue.

LINCOLN & COMPANY,

MANUFACTURERS OF IMPOVED MACHINERY FOR

Bleaching, Dyeing, Drying and Finishing.

Sole Makers for the United States of

Mather & Platt's Patent Self-feeding Tenters.

Complete Plants for

BLEACHING, ANILINE BLACKS AND INDIGOS.

54 to 70 Arch Street, - HARTFORD, CONN.

BIRCH BROTHERS,

Bleachery Machinery.

Also TULLAR'S Patent Stretching, Straightening and Drying Machine for

TUBULAR FABRICS.

KENT ST. AND FITCHBURG R. R., SOMERVILLE, MASS.

COPPER PRINT ROLLERS AND SINGE PLATES

For CALICO PRINTERS and DYERS.

Best of Workmanship, Quick Delivery and Bottom Prices.

New Bedford Copper Co., New Bedford, Mass.

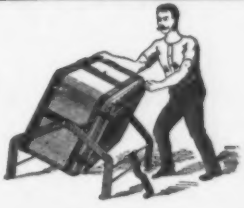
Copper Swing Dye Tank in Iron Frame.

COPPER WORK FOR DYERS

Silk Finishers, Chemical Works, etc,

Vacuum Pans, and Copper Apparatus for Logwood Extract Manufacturers. Jacket Kettles, Varnish Kettles.

Estimates furnished to all parts of the country.



CHAS. BRABENDER, Sen.,

Patterson Copper Works, Gun Millyard, Paterson, N. J.

Nye & Tredick,

Manufacturers of

PLAIN AND AUTOMATIC CIRCULAR RIB

KNITTING MACHINERY

for Knitting Ribbed Shirts, Drawers, Tights, Combinations, Skirts, Jackets, Caps Bicycle and Athletic Suits, Hosiery, Shirt Borders, Cuffs, Etc.

Automatic Seamless Machines.

AUXILIARY MACHINES AND SUPPLIES.

606 Arch St., Philadelphia, Pa., U. S. A.

ESTIMATES GIVEN FOR THE

Complete Equipment of a Knitting Mill.

KNITTING MACHINE CYLINDERS.

PAXTON & O'NEILL,

129 Bread Street, - - - Philadelphia, Penn.

Originators of the Weldless Forged Steel Cylinder. Dials, and Cylinders all sizes up to 24 inch, for the different Circular Rib Frames, Seamless Knitters, etc. The Finest that can be cut, and the Best as to Material Accuracy and Durability.

H. BRINTON & CO.,

Successors to

BRINTON, DENNEY & CO.,

Builders of a Full Line of

CIRCULAR RIB and SEAMLESS KNITTING MACHINERY,

FOR

UNDERWEAR AND HOSIERY.

213 and 215 Race Street

PHILADELPHIA, PA.

—*RHODE ISLAND, Centreville. The Fales & Jenckes Machine Co., of Pawtucket, are to build the spinning frames for the new Warwick Cotton Mill, now being erected here. The Howard & Bullough Machine Co. of Pawtucket, will furnish machinery for the picker and carding departments.

—*TEXAS, Houston Heights. The Southern Cotton Co. has recently been organized for the purpose of erecting a plant in which to gin and clean inferior grades of cotton, and pressing the same into bolls or rolls, similar to those made on regular lap machines.

—*TEXAS, Houston Heights. Having investigated the report that A. F. Parker, proprietor of the Houston Heights Cotton Mills, had been succeeded by the Southern Cotton Co., we can authoritatively state that he has been succeeded by the Augusta Mfg. Co., a company recently organized here, with a capital of $100,000, and of which J. W. Walker is president and A. F. Parker, vice-president, agent and general manager. They will manufacture cotton and woolen goods, such as denims, ticks, shirtings and ladies' and men's suitings.

—UTAH, Ogden. Mrs. T. C. Bond has purchased the knitting business formerly owned and conducted by J. E. Sherlock, and is now operating the same.

—VIRGINIA, Lynchburg. We learn that the Stamford Mfg. Co., of Stamford, Ct., are preparing to establish a branch factory at this place for the manufacture of dyewood extracts. It is expected that the plant will be ready for operation in the fall of this year. Dr. Ludeking, chemist of the company, and Col. Jones, are now in Lynchburg, looking after the arrangement of the plant.

—WASHINGTON, Tacoma. Harrison & Son are running their mill on short time, with a reduced number of hands. They manufacture seamless hosiery.

—WASHINGTON, Tacoma. James Dolman is running his hosiery plant at Fern Hill on half time. He manufactures seamless hosiery.

Knit.

New Mills.

—DELAWARE, Wilmington. The building at Front and Orange Sts., which was recently fitted up, will shortly be equipped with new machinery, by a new company, who will manufacture hosiery.

—*GEORGIA, Athens. We are informed that J. Felix Smith is at the head of the new knitting mill company.

—*GEORGIA, Barnesville. Concerning the report that a new knitting mill was to be erected at this place, we are now officially informed that a company to be known as the Geo. Hanson Co. has been organized with a capital stock of $10,000. J. L. Kennedy is president, J. W. Hanson, treasurer, and Wm. Gee, superintendent. The company will build a new mill, which they expect to have in operation the first part of September. They will manufacture ladies' and gents' ribbed underwear.

—MARYLAND, Ellicott City. The room formerly occupied by Oppenheim & Chendorf has been rented by a firm in Baltimore, who will open a stocking factory.

—MASSACHUSETTS, Millbury. The Portsmouth Mills Co. is now fully organized and incorporated with a capital stock of $40,000, and has the old Crane & Waters knitting mill now in operation. Seventy-five hands are at present being employed, which number will soon be increased.

ESTABLISHED 1865.

Robert W. Scott. Louis N. D. Williams.

SCOTT & WILLIAMS,

BUILDERS OF

KNITTING MACHINERY.

WORKS

2079 EAST CUMBERLAND ST.

PHILADELPHIA.

CABLE ADDRESS.

•SCOWILL•

General Offices:

KNICKERBOCKER BUILDING,

S. W. Cor. 6th & Arch Sts.

Show Rooms:

Sixth & Arch Sts., Phila.

Pepper Manufacturing Co.

Lakeport, N. H.,

Manufacturers of

Knitting Machinery,

INCLUDING

Pepper's Flat-Ribbed Cuff Machine,

Automatic Welt and Loose Course Machine for Sock Tops. New Circular Stripes with Welt, Loose Course and Striping (Automatic), for Shirt Cuffs, Sock Tops, Hose Legs, Wristers, etc.

GOLF AND BICYCLE STOCKING MACHINES.

All kinds of

CIRCULAR RIBBED MACHINES,

For Men's Underwear, Ladies' and Misses' Hose Legs & Legnigs.

CORRESPONDENCE SOLICITED.

KNITTING MACHINES

of LATEST CONSTRUCTION

giving GREATEST PRODUCTION,

and with points of merit not to be found in any other style of machine for

SWEATERS,
UNDERWEAR,
LEGGINS,
ANKLETS OR CUFFS.

Automatic racking or shogging; Sweater Collar Machines.

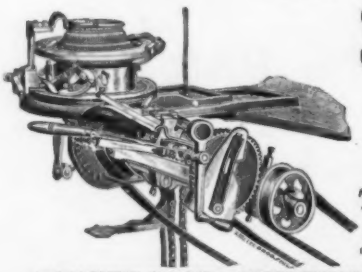
Racked or Shogged Borders onSweaters are our Specialties.

Leighton Machine Co., Manchester, N. H.

EXCELSIOR

Knitting Machine M'f'g Co.,

MANUFACTURE THE ONLY



3-4 AUTOMATIC

Knitting Machine,

With or without Fashion Device

That will stand all Factory Strain.

Address all communications for prices and samples on the 3-4 to the

EXCELSIOR KNITTING MACHINE M'F'G CO.,

Cor. Birch St. and P. & R. R. R. So. Bethlehem, Pa.

—MASSACHUSETTS, Wakefield. A new industry is to be started here Sept. 15th, that will give employment to about 70 hands. The concern will be known as the Bolt Knitting Co., with Chas. M. Winship as president and general manager. This business will be entirely independent of the business of Winship, Bolt & Co. The new concern will occupy nearly the whole of the lower floor of the Wakefield block.

—NORTH CAROLINA, Gibsonville. The new Standard hosiery mills have been started up.

—NORTH CAROLINA, Mebane. W. E. White and D. A. White are considering the advisability of erecting a $75,000 or $100,000 knitting plant in this place.

—OREGON, Portland. Geo. A. Lake, formerly of Ogden, Utah, is operating the new knitting mill in this place.

—*PENNSYLVANIA, Hawley. H. Nollan, proprietor of the U. S. Knitting Mill, who removed to this place from Jersey City, N. J., last May, informs us that he will manufacture ladies' and men's bicycle sweaters, bicycle leggins and drawer leggins. The plant will contain ten machines. Alex. D. Nast, Chicago, Ill., will be the selling agent.

—*PENNSYLVANIA, Reading. Cotton and woolen hosiery will be manufactured in the new knitting mill which we reported Samuel Romig was about to start here. He expects to have his plant in operation some time in September.

—SOUTH CAROLINA, Spartanburg. A stock company has been organized here with a capital of $10,000, for the purpose of building a new knitting mill. A charter for the same has been applied for, and it is proposed to commence operations at once.

—*SOUTH CAROLINA, Union. The Excelsior Knitting Mills, whom we recently reported had obtained a charter, inform us that it is their intention to begin the manufacture of goods by November 1, 1896. They will start with 40 new knitting machines, and manufacture hose and half hose. Steam will be the motive power. E. Nicholson is the president, J. H. Gault, treasurer.

—*TENNESSEE, Chattanooga. Garnett Andrews, Jr. has ordered the machinery for his new knitting mill, and expects to have the same in operation at an early date.

—WASHINGTON, Puyallup. Flora T. Bunnell has started up her new hosiery plant, and has four hands employed, which number will probably be increased later on. Seamless hosiery is being manufactured.

Silk.

New Mills.

—NEW JERSEY, Hawthorne. It is rumored that a silk mill will be erected in this place.

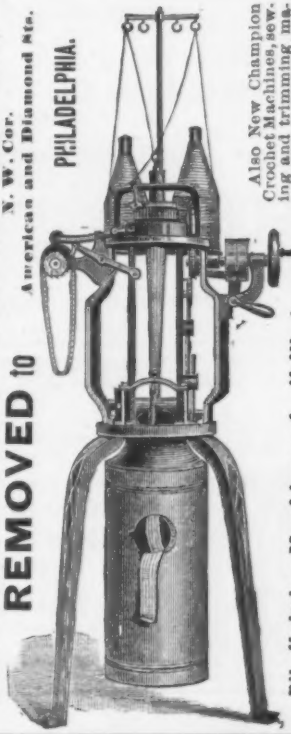
—*NEW YORK, Port Jervis. It is now settled that W. H. Wylie, the silk manufacturer of Paterson, will locate his plant in this place, and we are informed that a contract has been made for the erection of a building 35x100 feet, to be completed by Oct. 1st, in which 50 new looms will be installed. The mill will give employment to about 50 hands at the start.

Mills Starting Up.

—*PENNSYLVANIA, Easton. The Phillipsburg Silk Mill Co.'s new plant is now in running order, and turning out about 2000 yards of dress silks per week.

—WASHINGTON, Tacoma. Walker's hosiery plant has started up.

CHAMPION SEWING MACHINE COMPANY,
REMOVED to N. W. Cor. American and Diamond Sts. PHILADELPHIA.

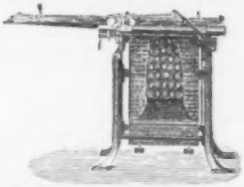


Also New Champion Crochet Machines, sewing and trimming machines, etc. Send for descriptions.

Rib Knitting Machines of all Kinds.

Grosser's Unrivalled

Flat Knitting Machines



For Scotch Fancy Pattern Golf or Bicycle Stockings, Fancy Sweaters, Gloves, Mittens, Caps, Cardigan Jackets, Ladies' Skirts, etc. Seamless Shaker Sweaters (both armholes automatic, selvedge open), Theatrical and Athletic Tights. Four section full automatic power sweater machine. Four section full automatic, full-fashioned sleeve machines with automatic widening of the fabric.

SPECIALTY. Regular plain hand sweater machine, 5 needles to inch, 18 inch needle bed, with 182 needles, new improved drop-lock and two yarn carriers, front and back, for the selvedge edge, laced front and two-color striping attachment, only $98.00 net cash.

A. MUELLER.

U. S. BRANCH OFFICE AND SHOWROOM:

760 LEXINGTON AVENVE, - BROOKLYN, N. Y

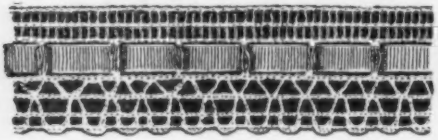
Write for Descriptive Catalogue.

PERSEVERANCE MILLS.

Krout & Fite Man'f'g Co., MANUFACTURERS OF

SILK AND COTTON NARROW FABRICS,

Spring, 1897, Samples Now Ready.

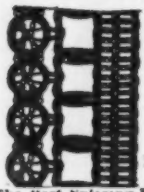
Lace  Edgings

FOR LADIES' JERSEY RIBBED UNDERWEAR.

Spool Tapes a Specialty. 2632-40 Mascher Street, Philadelphia, Pa.

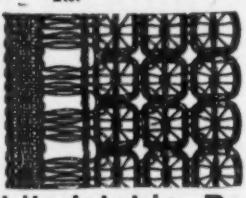
FLEMING & CHAPIN,

Braids Cotton and Worsted Tapes Cotton and Silk Yarns Cotton Warps, Etc. Threads



Use the Genuine Patented

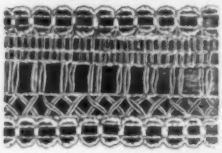
CROCHET LACE EDGINGS.



Manufactured under letters-patent granted December, 1894.

The Best Splicing Yarns in all Numbers.

215 Church St.. Philadelphia, Pa.



GERMANTOWN

LACE AND EDGING WORKS.

F. A. BYRAM,

Cumberland Street, Philadelphia, Germantown, Pa.

FLEMING & CHAPIN, 215 Church St., Selling Agents.

GIBBONS FRAME

Sewing Machines, with or without Trimmers,

Welting Machines, with concealed stitch for tops of stockings.

Trimmers attached to all kinds of Sewing Machines.

New and Improved Looping Machines, stitch flat and elastic; sample of work on application.

Manufactory, Second and Diamond Sts., Ppiladelphia.

SHIRT Border Machines

Four and Five Section Flat Cuff Machines.

Fires.

—CONNECTICUT, Montville. The Montville Woolen Co.'s mill has sustained a loss of $2000 by fire, which totally destroyed the annex to their main mill.

—PENNSYLVANIA, Philadelphia. The hosiery mill of J. M. Williams, 5014 Knox St., was slightly damaged by fire recently.

—RHODE ISLAND, Sandersville. The Beckworth Mill was entirely destroyed by fire August 5th. The building was a 2 1-2 story, wooden structure, in which shoe and corset strings were manufactured.

Failures and Suspensions.

—INDIANA, Richmond. Test Bros., manufacturers of woolen goods and yarns, have failed for $30,000, with assets of about half that amount. The White Branch Woolen Mills near this place are included in the failure, and will probably be closed.

—MASSACHUSETTS, Williamsburg. A petition has been filed for the insolvency of George C. Cook, manager of the Hampshire Blanket Co. of this place. The petition was filed by the Massasoit Mfg. Co., Fall River, which has a bill against Mr. Cook of $781.

—NEW YORK, Brooklyn. Schedules of Aaron Peck, president of the Brooklyn Knitting Co. show direct liabilities of $44,146 contingent as endorser, $12,246, nominal assets, $86,333, actual assets, $13,075.

—OHIO, Georgetown. A report states that Young & Dudley Co., who manufacture woolen goods in this place, and also at Aurora, Ind., has made an assignment. Liabilities $6000; assets, $3000.

—OHIO, Hamilton. Addie L. Dorris has made an assignment to David Pierce, of the Dorris Knitting Factory business, for the general benefit of the creditors. The assignee has given bond in the sum of $9000, and William Ritchie, J. E. Morey and I. N. Slayback have been appointed appraisers. The assets are estimated at $4500, and liabilities at $3000. Application has been made for a permit to work up the unfinished product.

—OHIO, Jackson. The Franklin Woolen Co. has made an assignment. J. A. Long, one of the directors, formerly general manager, was made assignee. The total liabilities are over $11,000. The assets are about $15,000.

—PENNSYLVANIA, Aston. The textile mills of Rhodes Bros., which were recently shut down, have been placed in the hands of a receiver. The debts amount to over $100,000. It is said that the assets will cover all the claims.

—PENNSYLVANIA, Philadelphia. James S. Woodward, commission yarns, has made an assignment.

—RHODE ISLAND, Mapleville Mills. The sheriff has received two attachments for $8529 against the Mapleville Mills, one in favor of Betsey Legg for $4576, and the other in favor of Lydia Legg for $3953, both for money loaned to the company. James Legg is president and Wm. Legg, treasurer of this corporation. The attachments were served on commission merchants here.

—UTAH, Ogden. Lake & Son, hosiery and knit goods manufacturers, have failed and gone out of business in this place.

—Napped cotton flannel goods seem to be more popular than ever this season, and very handsome lines are being shown in great variety.

Dixon's Graphitoleo.

Dixon's graphitoleo is a preparation of a very finely pulverized and very choice graphite and a pure petrolatum, warranted not to gum or become rancid.

The merits and wonderful lubricating power of Dixon's flake graphite are well known to almost every engineer and machinist throughout the world. It has been tested by professors at the leading mechanical institutes, and also by the mechanical experts of the great railroad companies throughout the country, and declared to be the finest and best natural lubricant known.

An article combining a perfect lubricant and rust preventive, put up in convenient form, is something desired by every bicyclist, hunter and yachtsman, as well as by every office and household.

To all such and many others, Dixon's graphitoleo will be not only welcome, but indispensable. It is manufactured only by the Jos. Dixon Crucible Co., Jersey City, N. J.

CRANE MFG. CO.
LAKEPORT, N. H.
Spring Needle Circular Knitting Machine
For Hosiery, Shirts, Drawers, Jersey Cloth and Stockinet.
A Specialty of Hardened Bladed Burr Wheels with Self Oiling Brackets.

The BALLOU
Automatic Ribbed Knitting Machine
Built with **Sectional Cam Ring** and the most perfect **weight take-up**. Best, Strongest and Most Durable Machine. **Two Feed Double Knee Machines.** We can add to our own or other makes now in use. Also Brushing Machines.
Lewis Jones, 60½ & Media Sts. Phila. Pa.

WE NEED NO SPECIAL POINT
To prevent the needle from picking up the brass, nor special mechanism to prevent injury to the brass, for the needle in our looper never strikes anywhere but the centre of the point.
HEPWORTH & CO.
Lehigh Ave. & Mascher Sts., Phila., Pa.

HODGSON & HOLT MFG. CO.,
Builders of the
Abel Winder, Steam Presses,
Fulling Mills, Seamers and Loopers, Ribb Leggers, and French Footers.
Send for Illustrated Catalogue.... **LACONIA, N. H**

STEPHEN A. ASHMAN,
Forged Steel Cylinders and Dials
For Knitting Machinery.
3 Fetter Lane, PHILADELPHIA.

The Unique

FULL AUTOMATIC

SEAMLESS KNITTER

Any kind of stock can be used.

Transfer device most practical.

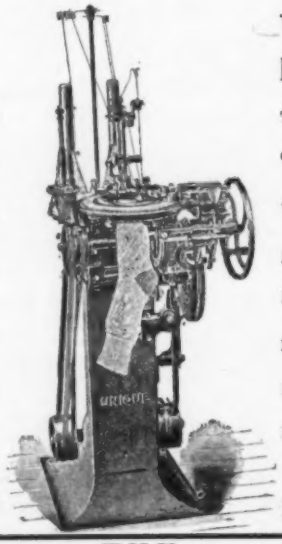
No delicate parts. Simple construction.

Needles all alike and inexpensive.

No sliding sinkers to wear out.

No weights required.

JAMES TAYLOR,
Sole Selling Agent.



THE BEST MACHINE
ever invented for
Knitting Wool Stockings.

The best fabric.

Changes yarn in the heel and toe automatically.

We'l built, strong and durable.

High grade.

Light running.

No cylinder to give trouble.

Machine easily managed.

Most liberal heels.

835 Arch Street,
PHILADELPHIA, PA.

THE

Merrow High Speed Crochet

and Scallop or Shell Machines.

For finishing the edges of Knit Goods, Bed Blankets, Horse Blankets, or other fabrics.

For particulars and samples, address

THE MERROW MACHINE CO.,
133 Sheldon St., HARTFORD, CONN

BOARDS FOR FAST BLACK DYERS.

HOSIERY FINISHING BOARDS.

BEST WORK. PROMPT SERVICE. PRICES ALWAYS RIGHT.

JOS T. PEARSON 1815-21 TAYLOR ST. KENSINGTON PHILA.

CIRCULAR RIB KNITTING MACHINES,

Carefully designed and well made with Solid Forged Steel Cylinders and Dials, Segmental Cam Rings, Encased Take-up, Stop Motions, etc. Standard Sizes, Reasonable Prices. Also

KNITTING MACHINE CYLINDERS AND DIALS.

STAFFORD & BABCOCK, - Little Falls, N. Y.

Staple Goods Safest.

The hard times bring with them a conservatism which all buyers bear testimony to. A New York buyer says:

"The call for fall goods in this department is mostly for staples, and besides the plain black goods, fleeced and cashmere goods are the best sellers.

"Much the same lines are finding favor as last year. Last year a decided preference for men's fleeced or napped goods was manifested the latter part of the season, and has been noticed again this year."

G. W. Haskell, manager of the hosiery and underwear department of Marshall Field & Co., said to the Dry Goods Reporter: "This is a staple year in this department, and in this class of goods our advance business compares very favorably with that of other years. We think the sales so far are quite up to those of last season. Manufacturers have adopted the policy of turning out goods only for orders, and not stocking up ahead as has been the custom in former years. If a heavy trade develops later, it is possible that this short production will be inadequate. Especially is this true with the most desirable lines.

Cotton Hosiery Gains in Favor.

Buyers report a growing tendency among consumers to wear cotton hose throughout the year, and have kept this fact in mind in placing orders. In stores selling to the better class of trade a good business is expected in fine cashmere and silk hose. Special lines of fine underwear are also growing in favor, and this tendency is being encouraged by the better class of retailers, as it insures a more profitable underwear business.

The Kind Wanted.

Good values in black cotton seamless hosiery ranging from 75c. to $1.25 a dozen are in liberal demand, the supply of the right sort of this class of goods being limited.

Women's cotton seamless hose at $1 to $1.75 are also asked for, but more could be placed if a larger variety of goods of the right finish and make were to be had. The trouble with most of the manufacturers of American seamless hosiery is that they do not display sufficient confidence in the trade as they are ignorant of its actual requirements. They are far too busy catering for the supply of a 5c. sock or a 10c. stocking to give attention to the production of seamless goods to compete in finish and quality with the best values offered by the foreign trade in full-fashioned goods.

When domestic manufacturers cover this point satisfactorily they will present a far better balance sheet at the end of each year. —[Dry Goods Economist.

They are Right.

There is some courage left in the knitting trade. A Cohoes manufacturer is quoted as replying to a question on the business outlook:

"Yes, I expect a good year for our local manufactories because I think McKinley will be elected and you know that means an increase in the prices of our goods as we will then have to pay duty on wool, etc. So confident are the local knitgoods men in the election of McKinley that I, as well as many others, are laying in large quantities of pearl buttons, wool, etc., as we hope thus to make a profit by the saving of duty on wool and other commodities."

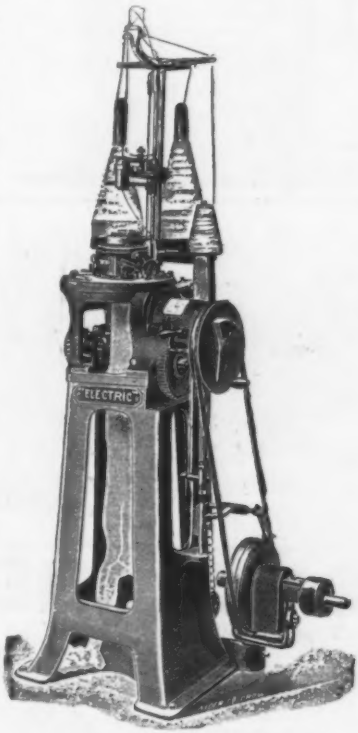
The general prevalence of such sentiments would be of vast importance in moulding public opinion, and improving the present business conditions.

E. Jenckes Man'f'g Co.,

75 WEEDEN STREET,

PAWTUCKET, R. I.

Proprietors and Builders of



"ELECTRIC"

AUTOMATIC KNITTING MACHINE,

FOR

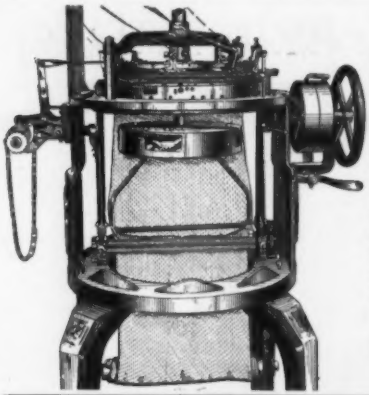
Seamless Hosiery, Wool, Cotton or Silk,

From the Coarsest to the Finest Gauge.

Among the many strong claims for this machine are

The Highest Speed,
First Quality Work,
Simple Construction,
Easy to Learn

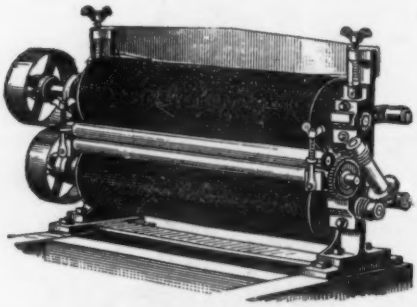
Send for Descriptive Circular and Terms.



KEYSTONE
AUTOMATIC NAPPING MACHINE.

This machine puts on a first-class napp, touching every spot in the fabric, and requires no attention; does not interfere with the knitting; it has no connection with the Dial or Cylinder; it brings out the goods the regular width and length, after once adjusted, and brings out rib tops and bottoms so they can be cut straight across with one cut. There is no flying waste from this machine, around the mill. These machines can be seen in operation at our works in Spring City. Any further information desired will be cheerfully given.

Keystone Automatic Napping Machine Co., Ltd.,
SPRING CITY, PA.



S. B. ARDREY & SONS,

Bristol, Pa., U. S.

Manufacturers of the New and Improved

Brushing Machine

For Fleecing Knit Goods.

Carefully Constructed, Substantially Built,

Filtering Oilers,

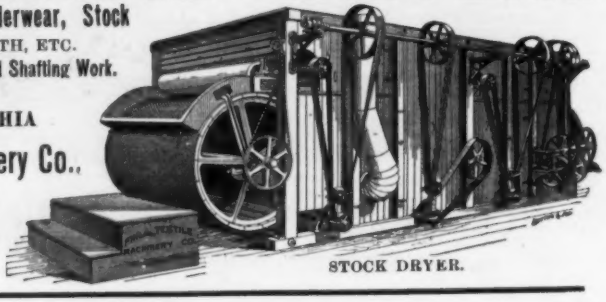
Parts Removable Without Disturbing Frame,

Delicate Adjustment, High Speed with Durability.

CYCLONE DRYERS

For Stockings, Underwear, Stock
YARNS, CLOTH, ETC.
Textile Machinery and Shafting Work.

PHILADELPHIA
Textile Machinery Co.,
Hancock Street
above
Lehigh Ave.,
PHILADELPHIA, PA.



STOCK DRYER.

DESIGNS. Expert Service.

I am prepared to furnish to manufacturers, advice, opinions, or suggestions as to styles and patterns of goods. If desired I will furnish details of weave construction, stock to be used, and finish required, of any pattern or sample submitted to me. I am in constant touch with the New York market, and have the necessary technical knowledge. I am not simply a picker-out of patterns, but will do that work if desired. My terms are not unreasonable. All communiations confidentiail. Address **DESIGNER**, P. O. Box, 222 Brooklyn, N. Y.

Miscellaneous.

New Mills.

—CALIFORNIA, Hollister. The Lamont Flax Threshing & Flax Fibre Co. is about to establish a new plant here.

—NORTH CAROLINA, New London. The new cordage mill has been completed, and is being run day and night.

Enlargements and Improvements.

—CONNECTICUT, Middletown. It is reported that the L. D. Brown & Son Co. are now making preparations for the erection of a new dye house, which will be 132 feet long by 33 feet wide. They will also make some alterations in their boiler house, in which one new boiler will be added.

—NEW JERSEY, Paterson. Kearns Bros., the Riverside silk dyers, are about to begin the erection of a 150 ft. addition to their plant.

—Machinery for the hosiery mill of H. W. Thurston, Allendale, N. J., has been purchased, and the mill is about ready to start. The knitting machinery was supplied by the Branson Machine Company, of Philadelphia, Pa.

—We have a few copies of Fuller's Shrinkage Table in card form, which we shall be pleased to send to any mill or finisher writing for same, and enclosing three cents for postage, as long as they last.

—The union suit still continues to grow in favor, especially for ladies' and children's wear, and bids fair to show largely increased sales the coming fall season.

—The M. A. Furbush & Son Machine Company, of Philadelphia, have just completed quite a large order for woolen cards, card clothing, etc., for Mexico.

—Attention is called to the card of Hollister Bros., 160 5th Ave., New York, selling agents for Victor Delobel, Tourcoing, France. Their offerings are wool waste and yarns, in which specialty they can advantageously interest the American trade.

—The American Machine Co., Pawtucket, is very busy with orders, having contracts in hand for several of the leading mills both North and South, and are taking advantage of the slack times to make needed alterations and additions.

—H. H. Montgomery, for some time associated with the Goubert Mfg. Co., of New York City, and previous to that for several years with the Babcock & Wilcox Boiler Co., has accepted a position with Thayer & Co., Inc., of Boston, New York and Philadelphia, to be located in their New York office, in the selling department of Cahall and Babcock & Wilcox boilers, manufactured by the Aultman & Taylor Machinery Co., of Mansfield, Ohio.

WM. COREY CO.,
Manufacturers of Knitting Machine
Latch Needles,
MANCHESTER, N. H.

Excelsior NEEDLES
The best hosiery needle in the market.
Manufactured by
Wardwell Needle Co., Lakeport, N. H.

LOYAL T. IVES,
MANUFACTURER OF ALL KINDS OF
Spring Knitting Needles
NEW BRUNSWICK, N. J.

ORION TREAT,
MANUFACTURER OE
SCREW RIVETED BALMORAL AND DOUBLE RIB NEEDLES.
(Patented May 6. 1890.)
Manchester Green, - - Conn
All work guaranteed.

H. LYDALL & FOULDS,
Manufacturers of all kinds of
Knitting Machine Needles, Narrowing Points, Hooks, etc.
Pat. Screw Rivet Balmoral Needles a specialty
MANCHESTER, CONN.

Wm. Breedon & Son,
Manufacturers of
Spring Knitting Needles,
And Burr Blades of all kinds.
Amsterdam, N. Y.

STAR NEEDLE CO.
Spring Knitting Needles and Points from the Best Cast Steel. Satisfaction Guaranteed.
S. K. Paramore Manager.
New Britain, Conn.

STANTON & LEWIS,
Central Steam Forge
Knitting Machine Cylinders and Dials.
316 and 318 BRANCH ST.,
PHILADELPHIA, - PA.

JAMES H. QUILTER,

Certified Teacher of Frame-Work Knitting. City and Guild, of London Institute, England.

Information given on all subjects relating to the manufacture and finishing of Hosiery and Hosiery Fabrics.

Estimates given for all kinds of machinery used in the knitting and allied trades.

Editor and Sole Proprietor of the

KNITTERS CIRCULAR

AND MONTHLY RECORD.

The only British journal solely devoted to the interest of the hosiery trade.

Annual Subscription, post free, 50 cts.

Send for sample copy.

ADDRESS:

11 Millstone Lane,

LEICESTER, England.

THOMAS KENNEDY,

Successor to N. H. BRUCE,
Established 1872,

COHOES, N. Y.

SPECIAL MACHINERY

for **Knitting Mills, Collar and Corset Factories.**

CLOTH CUTTERS—Power and Hand.
FOLDING, WINDING AND CUTTING machines, automatic.
POWER NECK MARKERS.
RIB CUTTERS.
Irregular Form

CUTTING MACHINERY

for Cloth, Knit Fabrics, etc.

☞ Write for Catalogue.

JOHN S. PALMER,

Manufacturer of

PAPER BOXES **for Hosiery and Textile Goods.**

Metal Edge Boxes or Heavy Goods.

35 Wistar St., Germantown, Pa.

LACINGS

For Overshirts and Underwear,

Both Tipped and Tasseled, and

OVERSHIRT NOVELTIES.

For Samples and other information, address

HEPNER & HORWITZ, 30 Howard St., N. Y.

Philadelphia Textile School

—OF THE—

Pennsylvania Museum and School of Industrial Art.

The only school in America which TEACHES THE DESIGNING AND MANUFACTURE OF ALL CLASSES OF TEXTILES.

Carding, Spinning and Finishing,
Chemistry and Dyeing.

Applications should be sent in at once for the term beginning October 1st, 1896. For circulars and other particulars, address,

E. W. FRANCE, Director,

Broad and Pine Streets, - Philadelphia, Pa.

Spontaneous Combustion.

Many substances take fire easily, says an English exchange. Greasy rags, cotton waste, etc., are self-ignitable. Some foreign manufacturer has instituted experiments on the self-ignition of cotton waste, and the results were very interesting.

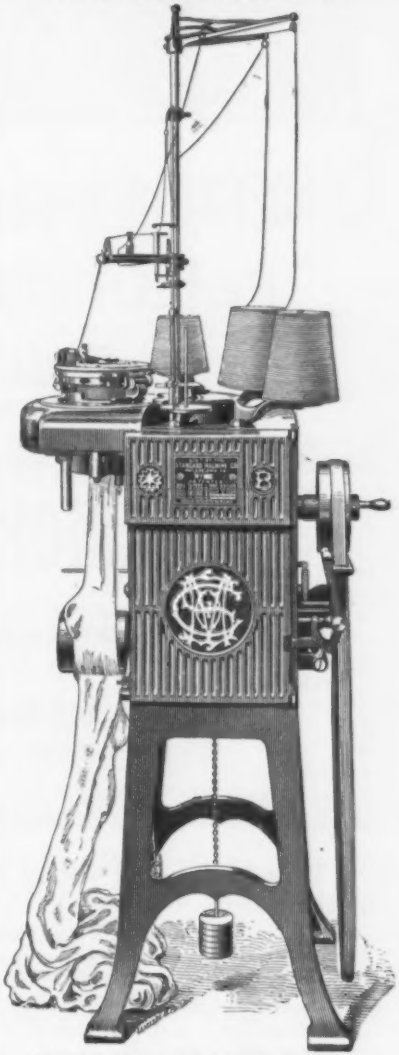
A handful of cotton waste was dipped into linseed oil, squeezed out, placed in a wooden box, and the temperature observed by means of a thermometer introduced into the box. The temperature surrounding the box was kept at 70° C. Soon after the temperature in the box rose to 173° C., and smoke issued therefrom. When opened so as to admit air, flame burst out at once. A box from which the air was perfectly excluded was consumed after five or six hours.

In another experiment, in which the cotton waste was saturated with rape seed oil, the box burned after ten hours. With an outer temperature of 56° C. gallipoli oil caused the spontaneous combustion of cotton wrapped in paper; castor oil required twenty-four hours; sperm oil, four hours; train oil, two hours, for a lively combustion.

In view of these conclusive practical results, it will readily become apparent to the thoughtful person that it is extremely dangerous to allow greasy or oily rags or waste to lie about the paint shop. Indeed, it is wrong to throw such matter on the floor at all, because it is apt to be forgotton and left lying there for some time. The safer and much better plan is to provide a galvanized iron receptacle, having a cover in which to throw all discarded waste at once, so that even should ignition ensue, the contents would simply burn without damage to surroundings.

There are dry substances which sometimes self-ignite. There is the well-known example of lampblack, although it is said that the presence of small quantities of oil, which is to be found in the black coming from the first con-

"STANDARD B"



COTTON STATES AND INTERNATIONAL EXPOSITION.

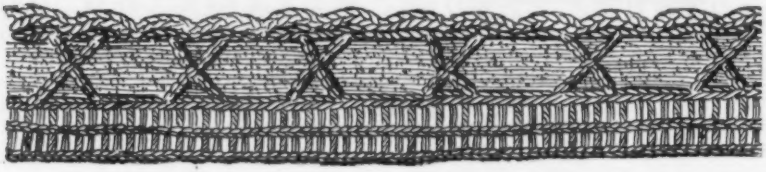
ATLANTA, GA., November 1st, 1895.

This certifies that the Appropriate Jury has awarded to the STANDARD MACHINE CO., of Philadelphia, Pa., **Diploma of Honor** and **GOLD MEDAL—Automatic Knitting Machinery.**

DANIEL C. GILMAN,
President Jury of Awards.

C. A. COLLIER,
President and General Director.

STANDARD MACHINE CO.
508 Minor Street,
PHILADELPHIA, - PA.



LEADERSHIP means SUPERIORITY.

FRIEDBERGER'S

Standard Edgings and Braids

ACKOWLEDGED by everyone to be

SUPERIOR to all other makes.

Continued Leadership Implies Progress.

Spring, 1897, line embracing radically new and original features, now ready for delivery.

ONE FACT OUTWEIGHS A HUNDRED CLAIMS.

The following facts are worthy of careful consideration:

Friedberger, who is the acknowledged originator and developer of the Edging and Braid trade as applied to Jersey Ribbed Vests, does NOT manufacture underwear, as some edging makers do, thereby competing directly with you; has the latest and most improved machinery, the only complete plant existent, employs the best brains in this line; makes it a special point to fill all orders promptly, no matter if for one gross or 1,000 gross; whose weekly output, 1,800,000 yards, is a guarantee of continued prompt deliveries.

References: 95 per cent of the Jersey Ribbed Underwear Manufacturers of the U. S.

CORRESPONDENCE SOLICITED.

GERMANTOWN, - PHILADELPHIA.

densers at the factory, is the cause of the spontaneous combustion to which it is liable. Still, even the dirtiest black may self-ignite. Instances are recorded where casks of lampblack have been almost red hot after standing some time.

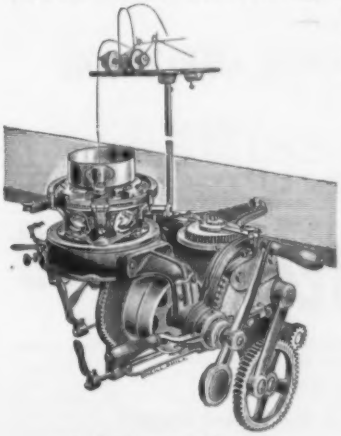
Prussian blue is another pigment very liable to self combustion in the dry state, but more particularly in the preparation at the factory. Then it is extremely dangerous, and the utmost caution must be exercised, not only to prevent it from bursting into flame, but to arrange matters so that in case a fire does break out it shall be confined to smaller limits. Outside of the factory we have heard of no difficulty attending Prussian blue in this way; of course, it is usually ground in a medium which prevents this, the dry blue being more rarely employed.

The liability of certain dry matters to explode under certain conditions is well known. Prussian blue will burst into flame because of its mechanical nature, lampblack because, usually, of the oil present; while such dry matters as flour, coal dust, and other fine organic dust explode when certain outside causes are present. This fact has been demonstrated, and further showed that dampness destroyed the explosive tendency. Live steam was recommended as a preventive, by damping the air in the mill. The same would apply to the air in the wood-working factory, where it is full of dry dust.

Baehr, of Dresden, found that leather belts used in mills are rapid generators of electricity, and that this would fire dry dust and cause explosion. Professor Pepper put some fine flour in a small box, fitting the top with fine wire netting, shook the box and caused, the finer dust to come in contact with a flame, like that made with a lighted stick. Under the right conditions the experiment will result in a large flame, resembling that made by burning of loose gunpowder.

To make combustion possible oxygen must always be present. There must be air present. The greasy rags would not take fire of themselves if kept from the air; hence, in keeping them in a tightly covered iron can the probability of combustion is reduced, and possible combustion made of no account. It is well to remember this fact. Liquid kerosene oil never explodes. Plunge a candle flame into a gasometer of pure coal gas and it will go out as it would if plunged into water; but mix air with the gas and the result would be much different. Lamps only explode from mixed air and oil vapor. Flour dust or fine wood dust, when mixed with air, will ignite like gunpowder. In a heap no trouble ensues.

WHY do Knitting-Machine Builders Try to Produce a Machine to Make a - - -



¾ Automatic.

BRANSON SOCK?

JAS. L. BRANSON,

OF THE BRANSON MACHINE COMPANY,

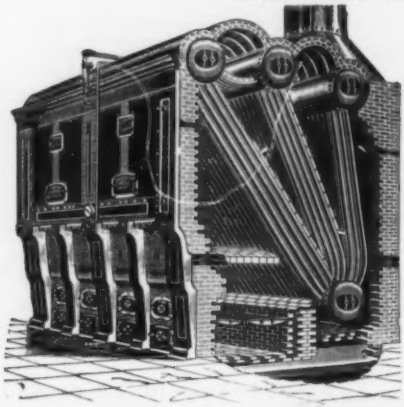
506 St. John St., Philadelphia,

Is the original inventor and manufacturer of this class of Machines, and, like most originators, manages to keep ahead of all imitators.

Send for Circular A.

THE "STIRLING" WATER TUBE STEAM BOILER.

Over 350,000 H. P. in use.



Absolutely safe at high pressure. Not an ounce of cast metal used in its construction. WE CAN PROVE to your entire satisfaction that the "Stirling" will give much higher average economy, with far less expense for repairs, than any boiler on the market to-day, and in proof of our claims we can refer you to some of the largest firms in the Country Please do us the favor to investigate before purchasing elsewhere.

Prices very reasonable. Catalogues, testimonials and complete information promptly furnished.

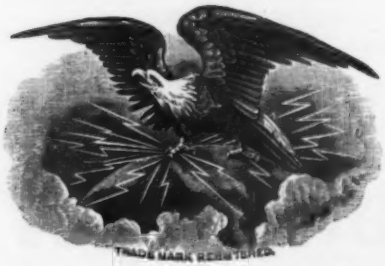
J. BRADFORD SARGENT,
8 OLIVER STREET,
BOSTON, MASS.

ROGERS PATENT SECTIONAL GRATE

TOP AND SIDE VIEW. END VIEW.

Send for Prices and Descriptive Circulars of this and other Grate Bars.
THE ARCAND GRATE BAR WORKS,
128 LIBERTY STREET, - - NEW YORK.

CHAS. MUNSON BELTING CO.,



STORE AND FACTORY:

116 and 118 North Fourth St.,

PHILADELPHIA.

MANUFACTURE

PURE CHESTNUT OAK

LEATHER BELTS.

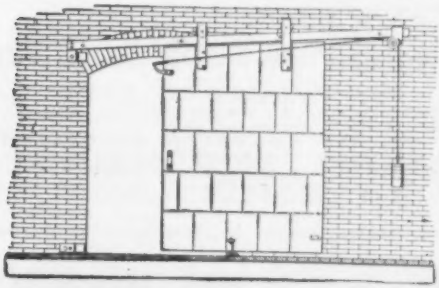
SHORTEST LAP BELT MADE.

We guarantee our Belts to give better satisfaction than all other makes

ALL BELTS GUARANTEED.

Represented in all **Principal Cities in the United States.**

Long Distance Telephone, 62-94.



VICTOR STANDARD

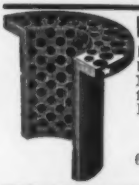
Fire Proof Door

— AND —

Fixtures.

ESTIMATES FURNISHED.

VICTOR M'F'G CO. (Fire Fighters) **Newburyport, Mass.**



Metalined or Oilless Bearings

For Loose Pulleys and other bearings. Perfectly clean No cutting or danger of fire from overheating. Send for Loose Pulley circular No. 5.

North American Metaline Co.

62 W. Av. cor. 3d St. Long Island City, N. Y.

ANDREW WATSON,

Machinist and Engineer, 2136-38 Dickinson St., near Trenton Avenue,

PHILADELPHIA.

Builder of VERTICAL STEAM ENGINES and BOILERS. Peculiar for their economy of space and fuel, safety and quickness in raising steam.

Also sole Manufacturers of Improved Balance Governos with Automatic Stop, Valves, Improved Pistons for Engine, which require no setting by the engineer.

Engine Builders and Dealers supplied with Governors Stop Valves, Safety Valves, etc.

PL

DIXON'S PERFECT LUBRICATING GRAPHITE.

The most Marvelous Lubricant Known.

Used Dry, or Mixed with Water, Oil or Grease.

NOT AFFECTED BY HEAT, COLD, STEAM OR ACIDS.

An Interesting and Instructive Pamphlet will be sent Free of Charge.

JOS. DIXON CRUCIBLE CO. Jersey City, N. J.

OPERATE YOUR MILLS

BY

ELECTRICITY.

First Cost Not Great.

Cost of Maintenance Low.

Great Economy in Operation.

Results Satisfactory.

WATER POWERS UTILIZED

NO MATTER HOW FAR FROM YOUR MILL,
BY OUR SYSTEM OF

TRANSMISSION OF POWER.

Write for Particulars and Estimates,

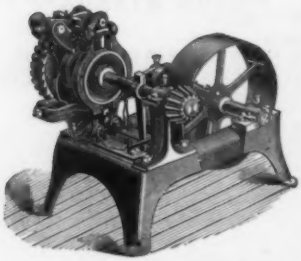
General Electric Company,

Main Office: SCHENECTADY, N. Y.

SALES OFFICE:

Boston, Mass.	Pittsburg, Pa.	Chicago, Ill.	Dallas, Tex.
New York, N. Y.	Atlanta, Ga.	Detroit, Mich.	Helena, Mont.
Syracuse, N. Y.	Cincinnati, Ohio.	Omaha, Neb	Denver, Colo.
Buffalo, N. Y.	Columbus, Ohio.	St. Louis, Mo.	San Francisco, Cal.
Philadelphia, Pa.	Nashville, Tenn.		Portland, Ore.
Baltimore, Md.	FOREIGN DEPT:	Schenectady, N. Y. New York Office, 44 Broad	

WATER-POWER



Governed for Textile Mills and Electrical Work

The limit of government of water-power is often determined by the design and construction of plant. Consult us i possible before completing your plans.

With **OUR COMPOUND REGULATORS** we will undertake and **guarantee** the government of water power **for all purposes**, including **Electric Railway, Power and Lighting Plants.** We make and sell all of Replogle's Electrical and Mechanical Governors and other devices for the government of water power. Expert advice furnished on application. If results of your present system are not satisfactory write us. Address all inquiries to

THE REPLOGLE GOVERNOR WORKS,

MARK A. REPLOGLE, Chief Engineer. **AKRON, OHIO.**

BEAR POLAR BRAND

Polar Belt Dressing.

THE BEST IN USE.

Put up in 25, 50, 75 and 100 lb. cans, One-half barrels and barrels.

Composition Wire Belt Lace.

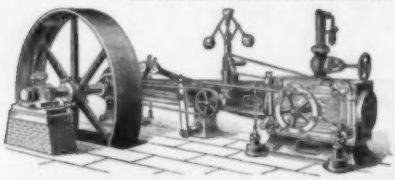
It will not cut the belt or tear out at the lace holes.

For circulars and prices address,

GEO. W. SOUTHWICK & CO,. Stamford, Conn., Sole Manufacturers.

Newburgh Ice Machine & Engine Co.,

Successors to WHITEHILL ENGINE & PICTET ICE MACHINE CO.



Office and Works:

NEWBURGH, N. Y.

Manufacturers of

WHITEHILL . . . CORLISS STEAM ENGINES, Simple or Compound for any duty.

PENNEY'S ICE MAKING AND REFRIGERATING MACHINERY, using ammonia and PICTET sulphurous oxide system.

New York Office. Room 44, Taylor Building, 39-41 CORTLANDT ST.

Steam Boilers and Steam Power Equipments, Iron and Brass Castings.

Send for our Descriptive Circulars.

HARTFORD STEAM BOILER INSPECTION AND INSURANCE CO. HARTFORD, CONN.

SMEALLIE BROS.

BOILER FEED and **TANK PUMPS**

In four sizes for Hot or Cold Water.

No. 2 Single, 130 gals. per Hour.

No. 3 Single, 420 gals. per Hour.

No. 3 Double, 840 gals. per Hour.

No. 4 Double, 1680 gals. per Hour.

Strongest and Cheapest Pump in the Market.

Write for Circular and Prices.

24 Livingston St., Amsterdam, N. Y

TRADE
IMPERIAL
MARK.

ESTABLISHED 1876.

BOILER COMPOUNDS

For the Prevention and Removal of Scale in Steam Boilers.

Please mail us specimen of your Boiler Scale, which we will analyze for you FREE OF CHARGE, and prepare a compound for your special case, and guarantee satisfactory results. Send us a postal card and we will call.

IMPERIAL CHEMICAL CO.,

OFFICE AND LABORATORY, - 324 ST. JOHN STREET, PHILADELPHIA, PA.

WATER WHEELS

MANY SIZES AND STYLES. UPRIGHT AND HORIZONTAL,

adapted to all **POWER PLANTS** for all purposes. Easy working balanced gates. We guarantee most power with smallest quantity of water, at both full and part gates.

ENGINES AND BOILERS

UPRIGHT AND HORIZONTAL.

Write for pamphlet of either, stating your wants.

JAMES LEFFEL & CO., Springfield, Ohio, U. S. A

IMPROVED CEMENT LINED

WROUGHT STEEL PEN STOCKS.

Have you a water power that you wish to develop? or a defective wooden penstock that you must repair or replace? Then secure descriptive circular and price of my steel penstocks. They are cheaper than wood, they are indestructible, they are absolutely water tight; they are constructed on the ground where they are to be used, therefore can be adapted to the most difficult places. They will stand any head of water, they can be made of any size desired; they have been tested and approved for years. For full information and price, address the manufacturer,

GEO. DALRYMPLE,

Lock Box 466. **Fair Haven, Vt.**

LORD'S BOILER COMPOUNDS.

STEAM USERS

I will remove and prevent Boiler-Scales, prevent pitting, and all forms of corrosion, in any steam boiler at very small cost. Send sample of boiler-scale, the size of a quarter, for chemical test made free of cost, which will enable us to compound an article to meet the special requirements of your feed water. Address,

GEO. W. LORD,
Manufacturing Chemist, Philadelphia, Pa.

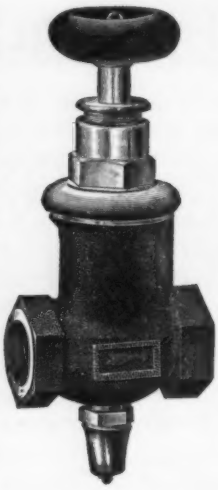
"BEAUTIES IN ART" pamphlet with full particulars, sent on request.

What Steam Coal Do You Use?

For the purpose of introducing its Steam and Gas Coals to the manufacturers of New England, the Dominion Coal Company (Limited), is prepared to quote prices that will prove satisfactory to consumers.

ADDRESS:

DOMINION COAL CO. Ltd.
95 Milk Street,
BOSTON.



The Curtis Steam Pressure Regulator

Is a steam saving appliance which has been before the public 12 years, the constantly increasing sales of which are due only to its merits.

IT IS THE STANDARD.

Its use means a saving in operating expenses. This means increased earnings.

Manufactured by the

D'ESTE & SEELEY CO.,

29 to 33 Haverhill St., Boston, Mass.

NEW YORK: 109 Liberty St. CHICAGO: 218 Lake St.

The Weight of Shafting.

Continued from July.

For some singular reason, considering the other errors committed, it was discovered and admitted in those early days that friction was dependent upon weight, and that frictional resistance was increased in exact ratio to increase in weight, and those depending upon the textbooks have that by heart also, and in that they are right, while being wrong in the other. Those best informed have made some effort to save power by reducing weight, but in this a part only of the contemplated benefits have been secured, because of the errors spoken of.

As an instance of this, hollow shafting was a few years ago designed to take the place of the heavy solid shafting then so much in use. The supposition was that if a 4-inch shaft, by making it hollow, could be reduced to the same weight as a 2-inch shaft, then it would require no more power to revolve it, and hence a saving of about 400 percent. in frictional resistance on the part of the naked shaft, and a corresponding saving in power to revolve it. It is true that such a change would result in a reduction of frictional resistance, but not so much as calculated upon.

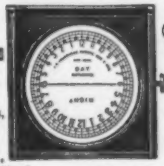
To state it plainly, a hollow shaft 4 inches in diameter, of the same weight as a solid 2-inch shaft, would require just twice the power to revolve it at a given speed as would be required for the 2-inch at the same speed. And, again, it would require eight times as much power to revolve a solid 4-inch shaft as it does a solid 2-inch shaft, both making the same number of revolutions in the same time, although the former is four times heavier than the latter.

To make this question a general proposition, it can be stated that the frictional resistance of revolving shafts, all other conditions being equal, is as the cubes of their diameters. Thus, for instance, if 1 horse-power should be required to revolve a given 2-inch shaft 100 times per minute, it would require 8 horse-power to revolve a 4-inch shaft of same length at same speed in same time. For an 8-inch shaft 46 horse-power would be required, and for a 16-inch shaft 512 horse-power. This extreme view of the case is presented so that

PASSENGER and FREIGHT ELEVATORS
THE GRAVES ELEVATOR CO.
53 STATE STREET, BOSTON.
92-94 LIBERTY ST. NEW YORK.
ROCHESTER, N.Y.
HODGES BUILDING. DETROIT.
2500 IN USE

McCALVEY ELEVATOR WORKS,
Improved Steam, Electric and Hand Power
ELEVATORS
C. F. TAYLOR, Manager. 602 604 Cherry St. PHILADELPHIA.

SALEM Foundry & Machine Shop
ELEVATORS
Salem, Mass.
Boston Office, 67 Chauncey St.

Headquarters FOR ELECTRIC & PORTABLE Watchman's Clocks
Lowest Prices. Latest Improvements. Patents 1886-1893. Send for Circular.
E. O. HAUSBURG, 41 Maiden Lane, New York.

Price, Complete $10.00
THE "ALERT."

ELEVATORS. Hoists Waiters for any place, capacity or weight. Electric, Steam, Hydraulic or Manual Motors, Shafting, Pumps, Boilers, Pipe, Ropes, Drug and Paint Mills, Presses, Gearing, Mining and Coining Machinery, Street and Road Making and Sweeping Machinery.
GEO. C. HOWARD, 1783 Barker St., Phila., Pa.

TO AVOID LOSS

NEVER SEND MONEY
IN LETTERS, BY MAIL.

ALWAYS

GET AN AMERICAN EXPRESS MONEY ORDER.

RATES LOWER AND SYSTEM SAFER THAN ANY OTHER METHOD.

DO NOT **CARRY MONEY WHEN TRAVELING.**

IT IS ENTIRELY UNNECESSARY IF YOU TAKF

THE **TRAVELERS CHEQUES**

OF THE **AMERICAN EXPRESS COMPANY.**

GEO. V. CRESSON CO.,

1800 Allegheny Avenue,

New York Office:
136 LIBERTY STREET.

PHILADELPHIA, PA.

Spur and Bevel Gearing. Improved Parting Pulleys.

MACHINE MOULDED AND CUT GEARING.

Patent Improved Parting Hangers. Patent Internal Clamp Couplings.

RING OILING AND WICK OILING BEARINGS.

HERE IT IS!!

Different from all others.
No rubber on the rod.
A cushion where it belongs.
It is the Packing you need.

KNOWLTON PACKING CO.,
19 Pearl Street,
BOSTON, - MASS.
Telephone 3915-2.

532 Arch Street, Philadelphia. Telephone 1560

64 Cortlandt Street, New York. Telephone, Cortlandt 2965.

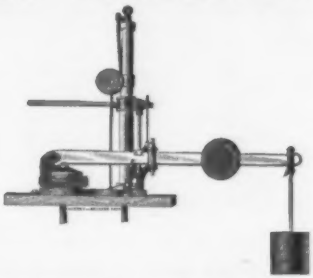
THE CARLMAN DAMPER REGULATOR.

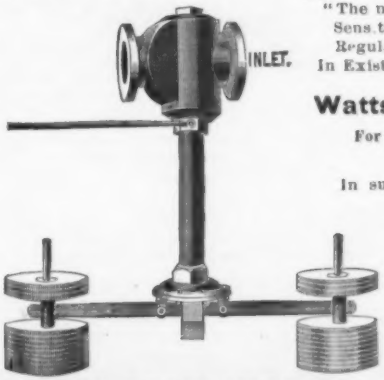
A GREAT COAL SAVING DEVICE.

Simple in Construction and Operation.

SENT ON 30 DAYS' TRIAL.

Send for Circular.





"The most Sensitive Regulator In Existence."

Watts Patent Pressure Regulator,

For Reducing High Pressure Steam, Water, etc., and Maintaining a Uniform Pressure.

In successful use for above purposes, as in low pressure heating systems, cylinder drying machines, and many other places where a reduced pressure is required. Adjustable to any pressure below that of the boiler.

Over 100 in use at Pacific Mills,
94 at Amoskeag Mfg. Co.,
300 furnished Lowell Machine Shop.

Write for Prices.

Steam Regulators, Pump Regulators, Steam Traps.

WATTS REGULATOR CO., 250 Lowell St., Lawrence, Mass.

the reader may more readily comprehend the problem, and be prepared to solve it in practice.

If weight alone were the only factor in determining the frictional resistance of revolving shafting or cylinders, of any kind, then a 16-inch shaft would require just 64-horse power to revolve it, as against 1 horse-power to 2-inch shaft; but, as stated, it requires 512 horse-power instead, a difference that will seem more astonishing to those who have never given the matter any reflection; but it is no more astonishing than true, nevertheless. After a careful study of this object lesson most practical men that are brought in daily contact with such problems can quickly see the need of much improvement in this matter. They can readily perceive that in hundreds of industrial establishments much power is wasted in driving numerous lines of unnecessarily heavy shafting.

The shafts have been made heavy to insure against breakage, and the matter of safety has been overdone. As a rule, they are much stronger than is required. But did anybody ever hear of a light shaft breaking? The shafts that break off are always heavy, and usually because too heavy and non-elastic—too rigid. A shaft that is elastic has some spring in it, and never breaks unless structurally defective; and many a broken shaft might have been saved if it had been lighter and more elastic. Right here lies the solution to the problem. All shafting should be made of the most elastic iron, and then it should be light in proportion. If the iron in the shaft possesses life and elasticity, as it should, comparatively light shafts would with the greatest ease and safety do the work now being done by thousands of heavy shafts in every manufacturing locality, and thus save thousands of horse-power of now wasted force that could be applied to useful work.

—Frank A. Thayer, for some years general manager of the Goubert Mfg. Co., of New York, has severed his connection with that company and associated himself with the selling department for the Aultman & Taylor Machinery Co.'s Cahall vertical and Babcock & Wilcox horizontal water tube boilers.

Perfection Belts,

Self Adjustable, Turned Over Edges.

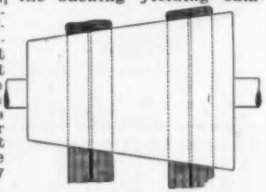
Patented Dec. 27th, 1892.
English Patent applied for on an improvement.

For Conical Pulleys; Shifting and Quarter Turn Belts
NOW MADE OF

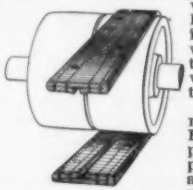
RAWHIDE.

Strong, Durable and Light Weight.

THIS is the most perfect belt made for driving Conical Pulleys. When an ordinary belt is placed on a pair of Conical Pulleys, it comes in contact with them at one edge, instead of across the entire face of the belt, owing to the fact, that the face of the belt is perpendicular to the plane in which the belt travels, while the surfaces of the pulleys are oblique to said plane. This produces an uneven tension on the belt, and renders it difficult to make it work properly. This defect is remedied by this improved belt. Its working face, is divided into parallel sections, and when placed over a pair of Conical Pulleys and tension is brought upon it, the sections hug the pulleys closely, for its whole width, the backing yielding sufficiently to allow this effect. The result is that the belt works with less wear, and transmits more power than a belt made in the ordinary way.



For rapid running SHIFTING BELTS, and for QUARTER TURNS they have no equal. Being made of one piece of leather in width, and TURNED OVER at the EDGES CANNOT POSSIBLY OPEN at the SIDES, by coming in contact with the shifter. Having a loose joint in the centre, prevents opening, and the plys separating, when used as a Quarter Turn Belt.



These belts are made from the best Rawhide Butts, prepared by a patented process. No lime or acids are used in the manufacture of the leather, from which these belts are made. The fibre of the leather is retained in its natural condition, making a leather soft, strong and pliable, from 30 to 50 per cent. stronger than any tanned leather. For Strength, Driving Power, and Durability these belts have no equal. They are much lighter in weight, will do more and better work, and will transmit more power, as they adhere much better to the pulleys on account of their soft and pliable surface, giving from 10 to 20 per cent. greater driving power.

Can furnish to order any width desired. Made endless if required. Every belt warrented perfectly satisfactory if properly used. Write for Price List, Samples and Discounts.

ADDRESS:

H. L. WEAVER, - Sole Agent,
(Manager Chicago Rawhide Mfg. Co.)
195-197 High St., Boston, Mass., U.S.A.

(Continued from page 64)

connections can be made as seems most convenient.

The cold water may also be admitted at either top or bottom of the heater, passing out at the opposite end; but for bad waters, feeding in at the top is recommended.

This being a closed heater and the water being forced through against boiler pressure, the flow along the heating tubes will be the same whether the water moves in an upward or a downward direction, but in the latter case the separation and settling of sediment will be much more thorough, while the heating will be the same.

By lifting the top chamber, the ends of all the tubes are exposed, and a swab or brush may then be used to clean the tubes. This, however, needs but rarely to be done, and if the surface and mud blows be opened for a few seconds every day, the heater is readily kept clean, and very little sediment is ever found to adhere to the interior surfaces of the tubes.

By leaving the blow-off valve open at night, or when not in use, the heater can be thoroughly drained to avoid the danger of freezing in cold weather.

—The offices of the Colliery Engineer Company, proprietors of "The Colliery Engineer and Metal Miner," "Home Study," and the International Correspondence Schools, in the Coal Exchange Building, Scranton, Pa., were partially destroyed by fire on Sunday morning, August 30, 1896. Fortunately, the printing plant was in another building, and the company had reserves of all instruction and question papers, drawing plates and other supplies and stationery used in the schools in still another building, so that the business will not be seriously interfered with.

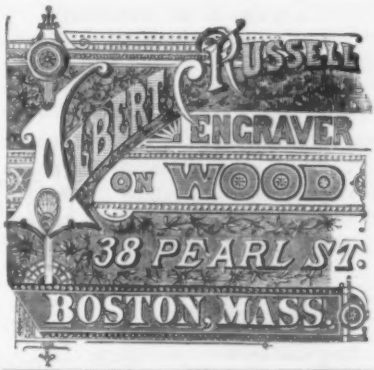
"The Colliery Engineer and Metal Miner" and "Home Study" will be out within a few days of the usual time, and they are already conducting the instruction in the schools as usual. Quarters have been secured on the three upper floors of the new Mears Building, corner of Washington Avenue and Spruce Street, Scranton, and the company is now prepared to enter new subscriptions to their publications, and also to enroll and commence promptly the instruction of new students in the schools, as before the fire.

—Rodney Thayer, late manager of the Atlantic district for the Babcock & Wilcox Co., of New York, has severed his connection with the Babcock & Wilcox Co., and associated himself with the Aultman & Taylor Machinery Co., in the sales department of their water tube boiler business. The Aultman & Taylor Machinery Co., of Mansfield, Ohio, are manufacturers of the Cahall vertical and Babcock & Wilcox horizontal water tube boilers.

THE DANFORTH BELTING CO.,
Manufacturers of
BELTING,
Aprons for Worsted Machinery, Roller Covers and Lace Leather.
221 Chestnut St., Philadelphia, Pa.

Hahn's Latest Improved Watchman's Time Detector.

This clock is adapted to six or twelve stations and the keys are all different. A liberal allowance made for old detectors. For circulars, prices and further information address,
NANZ & CO.,
116 A Chambers Street,
NEW YORK.



THE WEEKLY EDITION OF
SHELDON'S SPECIAL REPORTS
is the most Authentic Record of the important business changes constantly transpiring. Manufacturers should take it and use its columns for their announcements of new goods etc. Terms $2 per annum.
J. D. SHELDON & Co., Publishers, 54 Franklin Street, New York.

ALEXANDER BROS.
BEST OAK BELTING.
PHILADELPHIA.

Capital,
$1,200,000.

100,000 SPINDLES.
Weekly Product 120,000 lbs
14's to 160's.

HIGH GRADE

Cotton Yarns,

SPECIALLY ADAPTED FOR

Silk, Plush, Upholstery & Hosiery

MANUFACTURERS.

American Peelers. Sea Island. Egyptian Cottons.

Superior Qualities Combed and Carded—Furnished in singles, 2, 3, 4 and 6-ply chain warps, skeins, beams, spools, tubes, cones and Lisle Thread yarns.

Cops for Weaving and Twisting. Cops for Hosiery.

GLOBE YARN MILLS,

Fall River, Mass.

ARNOLD B. SANFORD, - - Treasurer.

Arnold B. Sanford, *Pres.* Arthur H. Mason, *Treas*
Capital Stock, $500,000.]

Sanford Spinning Co

FALL RIVER, MASS.

30,000 Spindles. Weekly product, 50,000 pounds 14s to 40s.

NOVELTY COTTON YARNS,

FROM AMERICAN PEELERS AND EGYPTIAN COTTONS.

OUR SPECIALTY: Superior qualities of Hosiery Yarns, Natural Shades of Cottons, and in Colors, Jaegers, Mixes, and Bleached, Hosiery Cops on Long Tubes, Skeins, Tubes, Cones and Lisle Thread Yarns. Furnished in Carded and Combed Qualities in Singles, 2, 3 and 4-plies.

YARN DEPARTMENT.

The Eastern Yarn Market.

Double and Single Roving White Cop Yarn. Spinners are getting some orders, as knitters fear the continued curtailment of cotton yarn production. Leading mills, if not stopped, are running only about 50 per cent. of their machinery. This order of things will continue until stocks are decreased. No orders are being placed, and when business starts an advance in yarn is certain. Spinners, if not manufacturing yarn at a loss, have been getting only cost, and have wisely decided to stop. Knitters are getting no orders for garments, and orders placed for yarn at this time are for future delivery, because manufacturers do not care to come on the market for yarn in October and November. We have in mind that a like condition of affairs existed a year ago, when the sharp advance of Egyptian yarn was in evidence. Raw cotton tends higher, owing to curtailment of the crops. There are many complaints by knitters of slowness in trade. Jobbers are placing no orders, yet knitters are sure that not enough garments have been manufactured for fall business. Southern yarns are held at low figures, with large stocks in the hands of commission men.

Woolen Yarn. Spinners have no orders, and the outlook for business at this time is poor. Weavers are all on light weight goods which require no yarn, and many knitters are stopped, waiting election development. Little stock is being ordered, although mills have almost nothing on hand. Slow collections are a discouraging feature.

Worsted Yarn. Spinners have no orders, and are practically stopped. Weavers are not running, although some mills will speedily start on orders for light weights, which will last two or three months. Light weight samples have been shown, and enough orders *taken*, in some instances, to start, but not sufficient to run the mills throughout the season. We believe the light weight season will be very late, as buyers will not be ready to talk cloth before the last half of September. Jobbers are ordering sparingly in many instances, only buying sample pieces, with the intention of purchasing larger quantities after November. Clothiers are all doing a "hand to mouth" business. The importation of cloths of all kinds has been materially checked, and there is no doubt that domestic manufacturers have beaten foreigners on price and quality of goods offered. A slight advance, however, would give the foreigner the market. Some of the biggest manufacturers are carrying large stocks, although among the smaller and more conservative mills, stocks are very light indeed. We hear of one mill with a stock of 38,000 pieces, and of another with 75,000 pieces of cloth on hand. The inclination is to await developments, without doing much business. It seems that if any business is secured, however slight, spinners will immediately feel the good effects. No class of yarn spinning is prosperous, and very few orders are being booked. Bids made are very low, and yarn is lower in price to-day than it has been in the history of the woolen industry. There really seems to be no price for yarn; anything for an order seems to be the rule. Older and larger spinners seem to be out of the race. Still, there is an under current of hope, and we believe just before and after the election, orders will be heavy. If merchants are to re-

Combined Capital Stock, $2,250,000.00
WM. D. HOWLAND, TREAS.

Total Spindles, 170,000.
BYRON F. CARD, AGT.

NEW BEDFORD MFG. CO.,
HOWLAND MILLS CORP'N,
ROTCH SPINNING CORP'N.

Single or Twisted, Combed or Carded. Hosiery Yarns, Chain Warps, Skeins, Spools or Cops, also on Beams from Nos. 10's to 120's.

HIGH GRADE COTTON YARNS.

Byron F. Card, Selling Agent.
NEW BEDFORD, MASS.

Frank E. Patterson, Prest. Oscar W. Wood, Treas.

Germantown Spinning Co.

COTTON CARDED

HOSIERY YARNS

In numbers from 6s to 26s.

Germantown, Philadelphia.

EGYPTIAN COTTON

HERMAN CAPELLE,
Rothschild Building, Cor. Leonard St &W. Broadway
NEW YORK.
H. BINDERNAGEL Alexandria, Egypt.

C. M. BLAISDELL, Pres. and Treas. G. A. BLAISDELL, Vice-Pres. E. J. CARRIGAN, Sec.
Established 1860.—Incorporated 1893.

THE S. BLAISDELL JR., CO.,

Egyptian COTTON Peruvian

American Long Staple a Specialty. and all American Southern points.

Shipments direct to mill form Egypt, Peru
CHICOPEE, MASS.

Established 1865.

H. M. WITTER & COMPANY,
Manufacturers of
COTTON WEBBING, TAPES AND BINDINGS,
Worcester, Mass.

W. WARREN THREAD WORKS,
Manufacturers and Importers of
Polished Threads and Cotton Yarns,
WESTFIELD, MASS.

Colored Yarns and Threads on cones a specialty. We manufacture spool cotton, sewing thread, button-hole cord and seaming thread put up in any form to suit the trade. Samples sent upon application and correspondence solicited.

Our Bleaching and Dyeing facilities are New and Unsurpassed.

main in business, orders must be placed, and as no orders are being given to foreigners, the lateness of the season will cause all the business to be placed with American mills. The uncertainty of affairs and extreme conservatism in credits largely cause the present depression. The mills in Lawrence, Lowell and Burrillville are closed. Rockville is running short time with reduced looms. Prices are nominal.

We quote:

DOUBLE ROVING WHITE COP YARN.

11s and 12s	15 cts.
16s	16 cts.
20s	18 cts.

Jaeger and Camel's Hair.

10s to 12s	16½ cts.

Cones 1 cent extra.

Other colors quoted on application.

Egyptian Combed.

1/10s to 12s	27 cts.
1/20s	28 cts.
1/34s	32 cts.
1/40s	34 cts.
1/45s to 1/50s	39 cts.

Cones extra price.

ALLEN SEED COMBED.

1/10s	24 cts.
1/40s	32 cts.
2/40s	37 cts.

WOOLEN YARN.

Will quote on inquiry, as there is too great diversity to give satisfactory quotation.

WORSTED YARN.

Fine Australian.

2/40s	70 cts.

Other numbers in proportion.

2/50s	75 cts.

Half-blood domestic.

2/40s	65-68 cts.

DOMESTIC.

1/4 Blood,	
2/28s, 24s, 18s	48 cts.
2/32s	50 cts.
3/8 Blood,	
2/32s	55 cts.
2/28s, 24s	55 cts.
1/2 Blood,	
2/22s, 28s	47 cts.

The Philadelphia Yarn Market.

Notwithstanding the continued depression amongst manufacturers, the rapid advance in cotton recently has compelled them to pay an advance on any yarns to be made up, and has induced considerably freer buying, although but little advance has been obtained on any lots of yarn held in stock. Spinners have allowed prices to be made, for the past three or four months, actually below cost, expecting very cheap cotton. They find now, when their stocks are almost entirely exhausted, they must pay more instead of less, and insist on an advance. The

J. H. LANE & CO.,
Commission Merchants.
COTTON and JUTE YARNS
110 Worth St., NEW YORK.
24 Kingston St., BOSTON.
151-53 Fifth Ave., CHICAGO.

ALEX'R KING & CO.
YARNS.
FINE IMPORTED YARNS A SPECIALTY.
54 Leonard St., New York.

SAWYER, MANNING & CO.,
YARNS,
86 & 88 Franklin St., NEW YORK.

O. H. SAMPSON & CO,
YARNS,
BOSTON, 67 Chauncy St.
NEW YORK, 58 & 60 Worth St.
PHILA. 206 Chestnut St.

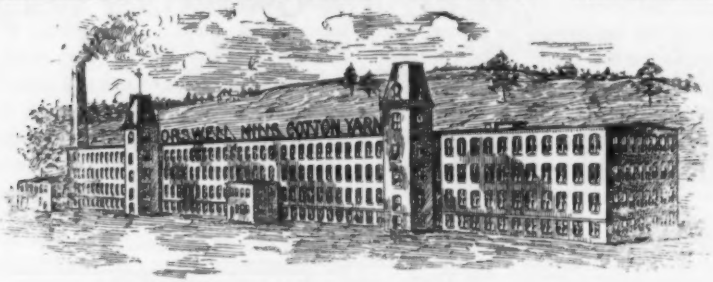
O. S. HAWES & BRO.,
WEAVING and HOSIERY YARNS,
All Piles and Numbers.
Imported Yarns a Specialty.
82 and 84 BEDFORD ST., FALL RIVER, MASS.

TRENTON WORSTED MILLS.
Trenton, N. J.
Manufacturers of
All Numbers of Worsted Yarns.
Knitting and Floss Yarns a Specialty.
A. FOSTER, Superintendent.

CAPACITY, 50,000 Spindles.

ORSWELL MILLS

FITCHBURG MASS.



COMBED OR CARDED

COTTON YARNS

In Chains and Skeins, on Balls, Beams, Spools—single or twisted.

GREENE & DANIELS MFG. CO.,

COMBED, CARDED AND GASSED

Yarns, Threads, Twines and Chain Warps,

Colored and Bleached Yarns Furnished in any manner desired by the trade. PAWTUCKET, R.I.

Cotton Yarns AND WARPS

Of Every Description.

James F. White & Co.

COMMISSION MERCHANTS,

54 an 56 Worth St., NEW YORK.
228 Chestnut St., PHILADELPHIA.

BURLAPS

all WIDTHS and WEIGHTS.

JAMES E. MITCHELL & CO.,

Commission Merchants.

122 & 124 Chestnut St., Philadelpia, Pa.
51 & 53 Summer St., Boston.

Cotton, Woolen & Worsted Yarns.
All numbers on Hand and Made to Order.

GRANT YARN CO.,

COMBED AND CARDED COTTON

YARNS 40s and above. AND WARPS

FITCHBURG, MASS.

Cotton Warps.

WHITTIER COTTON MILLS,
LOWELL, MASS.

MONUMENT MILLS,

Manufacturers of

White, Colored, Fancy and Double and Twist, COTTON WARPS

HOUSATONIC, MASS. 4s to 60s.

MALLISON ROPE WORKS, - ESTABLISHED 1827.

JOHN M. HODSON,

Single and Double Loop Bands for WORSTED and COTTON SPINNING.

ROPE, TWINES AND COTTON BANDINGS.

MANAYUNK, - PHILADELPHIA.

actual amount of yarn consumed, however, is probably less than a month ago, and any quotations made are nominal and liable to sudden change, as there is considerable difference in the market value of the same yarns, if held in stock, or to be made up on new orders. A fair average price would be about as follows:

WARPS.

20s to 22s	13 cts.
26/1	13½ cts.
12/2	13 cts.
14/2	13 to 13½ cts.
30/2 Southern	17 cts.
30/1 Southern	15 to 16 cts.
30/1 Eastern	17½ to 18½ cts.
14/1	12 to 12½ cts.

SKEIN.

26/1	12½ to 13 cts.
20s soft	12½ to 13 cts.
19s soft	12½ to 13 cts.
4s to 10s soft	11½ to 12 cts.
10s to 12s hard	10½ to 11½ cts.
12s soft	11½ to 12½ cts.
14s soft	12 to 12½ cts.
20/2 medium	13½ to 14 cts.
16s soft	12½ to 13½ cts.
14/2 hard	12½ to 13 cts.

SOUTHERN CONES.

6s to 8s	12½ to 13 cts.
10s	12½ to 13 cts.
12s	13 to 13½ cts.
14s	13 to 14 cts.
16s	13 to 14 cts.
20s	15 to 16 cts.
24s	15½ to 16½ cts.
26s	16 to 17 cts.

SOUTHERN COPS.

6s to 8s	12 cts.
10s	12 cts.
12s	12½ cts.
16s	13½ cts.
10s to 12s shuttle	12½ cts.

MIXED COLORED CONES.

6s to 8s	14 to 15 cts.
10s	14½ to 15 cts.
12s	14½ to 15½ cts.
14s	15½ to 16½ cts.

SKEIN.

8/3 carpet	11½ to 12 cts.
8/3 slack	12 cts.
9/4 slack	12 cts.
10s double reeled	11½ to 12½ cts.
16/3 slack	13½ cts.
16/4 medium	13½ cts.
2-1/2 to 4s	11½ to 12 cts.
8s to 10s	12 to 12½ cts.

KERR THREAD CO.
—SPINNERS OF—
Fine Combed Sea Island COP SINGLES
All Numbers, 30s to 150s.
Fall River, Mass.

BALE, STUART & CO.
Spun Silk, Cotton and Worsted YARNS.
31 George St., MANCHESTER, ENG.
495 Broome St., NEW YORK.

J. D. KENNEDY, Lessee
North Athens Cotton Mills,
Manufacturer of
COTTON WARPS AND YARNS
in numbers from 4s to 14s.
ATHENS, - - TENN.

ABEGG & RUSCH,
WORSTED YARNS
Dry Spun, Nos. 36s to 100s.
COTTON YARNS
Nos. 12s to 120s.
92 GRAND ST., NEW YORK.

WOOLEN YARNS.
All grades Woolen, Mixed and Merino yarns.
15 SETS CARDS.
EDWARD M. ROCKWELL,
LEOMINSTER. - MASS.

A. HERBST. J. W. JONES.
HERBST & JONES,
Successors to Kershaw Worsted Co.
WORSTED YARN SPINNERS,
21st & Naudain Streets,
PHILADELPHIA.

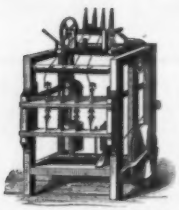
TUCKER & COOK MFG. CO
MANUFACTURERS OF
WHITE AND COLORED COTTON WARPS
Nos. 6s to 30s,
On Beams, Jack Spools or in Chain
CONWAY, MASS.

YARNS All Numbers and Qualities.
HOLLAND & WEBB,
478 Broadway, New York.

HADLEY
SPOOL COTTON AND FINE YARNS
COMPANY
COTTON SPINNERS.
MILLS AT HOLYOKE, MASS.

SPINNERS OF
FINE COTTON YARNS
30s TO 100s.
Gray, Bleached, or Colored. On cop, in skein on spools, cones or tubes.
Fine Cotton Warps, single and two-ply, in chain, etc.
95 Milk Street, BOSTON.

THE WILLIAM CLARK COMPANY,
WESTERLY, R. I.
Mills equipped with the latest and most improved machinery.
Combed Egyptian from No. 20s to 100s. Combed Sea Island from No. 40s to 200s.
Also 2, 3, 4, 5 ply and 6, 9 and 12 ply cable laid.
Hosiery Yarns on Cops Tubes or in Skeins, Grey, Bleached or Dyed. (Fast Colors.


Arkwright's Original Spinning Frame, invented 1768.

ESTABLISHED 1769.
SIR RICHARD ARKWRIGHT & CO., Ltd.
Manufacturers . . of . . COTTON YARN.
Single Yarns Carded and Combed. 2 ply **CASSED YARNS,** suitable for the silk, lace and suspender trade. Also **WARPS from 60s to 200s.**
Main Office for U.S.: 69 MERCER ST., near Broome St., NEW YORK.

The J. R. Montgomery Co.,
WINDSOR LOCKS, CONN.,
MANUFACTURE
LOOP OR BOUCLE YARNS, in Mohair and Worsteds.
COTTON SPIRAL OR LENO YARNS, to give leno effects with plain weave.
COTTON FLAKE OR KNOP YARNS for new effect in Cotton dress goods.
HIGH GRADE COTTON WARPS.
Also printers of Cotton, Wool or Silk Yarns.

MALCOLM MILLS CO.,
MANUFACTURERS OF
Novelty Yarns, Silk Noil Yarns, in Fast Colors AND White.
Mills, Frankford, Pa. Office, 229 CHESTNUT ST., PHILA.

YARNS
SOLIS - - BOSTON.
179 Devonshire Street.
ANDREW J. SOLIS, Jr. & CO.

EASTERN COPS.

26s shuttle	14½ to 15 cts.
40s "	17 to 17½ cts.
12s "	13½ to 14 cts.
10s hosiery	13 to 14 cts.
12s "	13½ to 14 cts.
14s "	14 to 14½ cts.
16s "	14½ cts.
20s "	16 to 17 cts.
24s "	17 to 18 cts.

Skein, 1-2 c. above cops.

Cones, 1-2 c. to 1 1-2 c. above cops.

Egyptian (carded), 4 c. above white.

Combed yarn 4 c. to 5 c. above carded.

Wool spun cotton yarn shows no change in demand or price. Spinners are generally shut down, with no stock on hand. Nominal prices about as follows:

20s cut black cops	13 to 13½ cts.
12s " " "	12½ cts.
15s " " "	12½ cts.

Merino and woolen yarns about the same as last month. Very little demand and payments are so uncertain and unsatisfactory that spinners are refusing many small orders they are offered.

Worsted yarns very dull; prices lower. Buyers practically make their own figures.

The Wool Market.

Unlike a season of fair or reasonable business, the condition of the wool market to-day is everywhere understood.

It is quite impossible to detect a sin-

Hosiery AND Weaving Yarn
ALBERT IVINS GROLL, BOSTON.

JAMES E. DALY,
SUCCESSOR TO
Johnson Extract Wool Co.
PATERSON, N. J.
P. O. BOX 250.
Fancy Colors in Wool Extracts a Specialty.

C. MOORE & CO.,
MANUFACTURERS OF
TWINES, THREADS AND YARNS.
Jacquard Harness Twines of all kinds on hand and made to order.
S.W. COR. FIFTH & MARKET STS.,
Philadelphia.

CERRISH WOOL & LEATHER CO.,
Manufactuers of
Calf, Sheep and and Lamb
ROLLER LEATHER,
Manchester, - New Hampshire.

GEO. FELL & SON,
LEATHER MANUFACTURERS,
Bolton, England.
SPECIALTY:
ROLLER SKINS
PERSIAN, FOR EGYPTIAN AND SEA ISLAND COTTON YARNS AND FINE COUNTS
WELSH, FOR AMERICAN COTTON YARNS AND COARSE COUNTS.
Cable and Telegraphic Address,
"PELICAN BOLTON"
AI Code Used.
REGISTERED TRADE MARK
GEORGE FELL & SON BOLTON LANCASHIRE
REGISTERED TRADE MARK

HOWLAND CROFT, SONS & CO.

LINDEN WORSTED MILLS.

Fine Worsted Yarns

OFFICE AND MILLS:
Broadway and Jefferson Avenue,
CAMDEN, NEW JERSEY.

ALLEGHENY WORSTED MILLS,

Thomas Wolstenholme, Sons & Co., MANFRS. OF

ALL NUMBERS SINGLE AND TWO-PLY,

Worsted YARNS,

Sell Direct,

on Cop or in Skein, for Weaving and Knitting Purposes, in White, Natural & Fancy Mixes.
Office and Mills: Frankford Ave. and Westmoreland St., Phila., Pa.

The Competition of Foreign Goods

On staple and plain fabrics under present tariff conditions makes it almost impossible to make any money, and the only hope of profit in making Dress Goods, Cloakings and Cassimeres seems to be in using

MOHAIR OR NOVELTY YARNS.

In the United States we are the only manufacturers from raw materials to finished product who make such yarns ONLY.
Perhaps we can be of use to you.

CRANSTON WORSTED MILLS, Bristol, R. I.

George Campbell & Co.

Worsted Spinners.

Yarns, both French System and Bradford.

Knitting Yarns in all Grades and Mixes.
All Numbers to 60s.

21ST STREET AND WASHINGTON AVENUE, PHILADELPHIA.

RIVER SPINNING COMPANY,

WOONSOCKET, R. I.

Belgian System WOOLEN and MERINO **Yarns.**

In any shade or quality suitable for making any class of Goods, domestic or foreign at prices to insure competition with imported goods of any description.

Selling Agents: JOHNSON & FARIE. Apply to Andrew Adie, 570 Bourse Building, Philadelphia.

gle feature new or of interest. The market continues dull, draggy and lifeless.

Every week sees a greater or less number of manufacturers in the market who come to buy. What the market has to offer both in the way of stocks and prices, is thoroughly well known to prospective buyers before hand. They come less to look around than to buy; they buy but in such small quantities that the takings are hardly perceptible.

Only absolute requirments are ordered, and the real quotations are seldom known.

Nominal quotations are low enough and are, doubtless, being held to by wool dealers wherever small lots are sold, and there is hardly anything else thought of; but it is safe to say that no large lots are moved without a reduction in price. The stocks of wool are nothing short of excessive, and it would take an extraordinarily good revival of business to reduce them sufficiently to revive prices. Some Australian wools have lately been reshipped to England, where they were called for before shipment.

The Cotton Market.

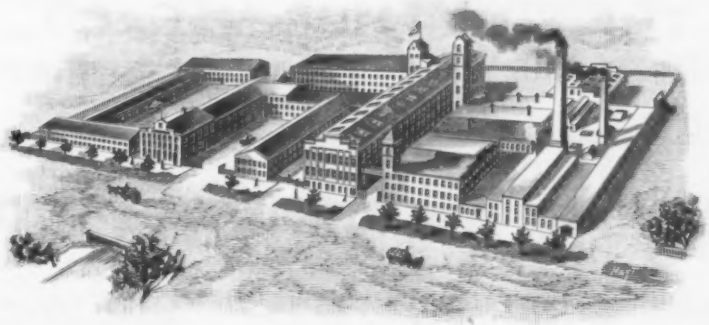
Early September finds the cotton market strong, yet with an element of uncertainty that makes holders very ready to sell. Quotations have been subject to crop reports, and resumption or suspension of work by mills. If a single word was chosen to describe the state of affairs on change, irregular would be the best term.

(Continued on page 125.)

SILK NOILS AND SILK NOIL YARNS
IN WHITE AND COLORS.
MOHAIR LOOPS, KNOTS, AND FANCY YARNS FOR DRESS GOODS AND CLOAKINGS.
A. T. SKERRY & CO. 47 LEONARD ST., NEW YORK.

LARGEST IN THE WORLD. ESTABLISHED IN 1870.

THE F. MUHLHAUSER CO.



FINE SHODDIES, CAPACITY: 10,000,000 lbs. per Annum

Rings, Threads, Botany Yarns, Etc.

BRANCH OFFICES: 143 Federal Street, Boston. 7-9 Grand Street, Troy, N. Y. 34 No. Front Street, Philadelphia, Pa.

CLEVELAND, OHIO.

Mills: WHITEHALL, N. Y.

SALESROOMS:
Whitehall, N. Y. and 18 Mercer St., N. Y. City

SPUN SILK YARNS.

WILLIAM RYLE & CO.,

DEALERS IN

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Foreign and domestic

SPUN SILK YARNS AND NOILS

Importers of European and Asiatic Raw Silk.

54 Howard St., cor. Mercer St., - NEW YORK.

SILK LOUR NOVELTY AND NIB YARNS,

PATENTED

Manufactured from PURE SILK ONLY,
With the Lustre and Staple preserved.

Made under an **IMPROVED PROCESS EXCLUSIVELV OUR OWN.** Prices fully **50 per cent lower** than any silk yarns made by other process.

THE SILK LOUR MFG. CO.,

Office and Mills, - Putnam and Mascher Sts.
PHILADELPHIA.

WEAVING and HOSIERY YARNS.

We Buy for Cash

WARPS, COPS, TWIST and SOFT SKEINS, Single, Double, 3-ply, 4-ply, etc.

COLORED YARNS for HOSIERY

on Cones, a Specialty.

Correspondence Solicited.

EDWARD S. HYDE, 223 and 225 Chestnut Street, PHILADELPHIA PA.

The crop is early, and is coming along at an unprecedented rate. That the yield will fall far below July estimates is now assured. The fact that this reduction follows a short crop gives special strength to the situation. With election out of the way, spinners will be in the market, also speculators, who are not now an element in the problem, although at this season they usually hold about 1,000,000 bales.

European stocks are only 883,000 bales against 1,901,000 bales a year ago, being the smallest for a long period. Exports the last week in August were 38,332 bales against 8811 bales during the corresponding period in 1895. Americans have much to sell; they also have an excellent market.

The report of the secretary of the New Orleans Cotton Exchange is significant. The movement of new cotton during August amounted to 165,909 bales against 7656 last year, and 36,868 bales in 1894. Dealers have long expected that exports in September would be very large, but the August figures surprised everybody. Some estimate that nearly $50,000,000 will be received from September shipments.

Egyptian cotton is practically unchanged, in spite of the unprecedented yield assured. It is a see-sawing market, with transactions few and far between.

The latest figures of visible supply:

	In U. S.	Abroad and Afloat.	Total.
1896, Aug. 28,	308,661	736,000	1,044,661
1895, " 30,	325,538	1,775,000	2,100,538
1894, " 31,	240,484	1 349,000	1,589,484
1893, Sept. 1,	316,589	1,454,000	1,770,589

On August 28th, 7,165,573 bales had come into sight, against 9,780,563 last year, and 6,717,142 in 1893. Takings by Northern spinners to August 28th were 1,645,533 bales, against 2,125,493 last year, and 1,747,314 in 1893.

—The labor unions in Maine will endeavor to have a weavers' particulars bill passed by the coming legislature, on similar lines to the statute in Massachusetts. There is some other legislation proposed for the coming session of the legislature, which the unions will endeavor to push through.

KILBURN, LINCOLN & CO.,
Manufacturers of
COTTON LOOMS,
TURBINE WATER WHEELS,
Shafting, Gearing, Calenders, Manglers, Hydraulic Presses, Machinists' Tools, Steam Engines, Pipe, Heavy Castings, and Machinery generally.
FALL RIVER, MASS.

THE ONLY
AUTOMATIC BANDING MACHINE
in the world for making loop bands.
Saving 50 per cent. in cost of making bands, besides giving a superior quality to those made on hand machines.
For particulars address,
COLE BROTHERS, Pawtucket, R. I.

CHAS. J. WEBB & CO.,
Foreign and Domestic
WOOL, HAIR and NOILS,
142, 144 & 152 to 156 N. Front St.,
PHILADELPHIA PA.

FOWLES & CO.,
Importers and Dealers
WOOLS, NOILS, HAIR,
Shoddies, Waste, Flocks, Etc.
102 Church St., Philadelphia.

THEO. A. DUROSS, Wool Sorter and Scourer.
Having doubled my former capacity, I am now prepared to scour the largest lots in the quickest possible time. Especial attention given to western shippers. All wools covered by insurance while in my possession. I deliver wool free of charge in Philadelphia. Immediate returns made on sample tests. All wools dried by cold air draft. Best of References. Correspondence Solicited.
Kensington Ave. and Huntingdon St., - PHILADELPHIA, PA.
Represented by S. MARTIN HENRY.

Carbonizing and Scouring.
A specialty with us is the Carbonizing Fine Stock, including Australian, Cape and South American Wools, Noils, etc.
Kennebec Woolen Mills, 2025 Naudain St.,
JOHN LUNN, Proprietor. PHILADELPHIA, PA.

Boston Finishing Works

WILLIAMSTOWN, MASS.

BLEACHERS, DYERS AND FINISHERS

Of Pure Finish Shirtings, Sheetings, Canton Flannels and Filled Goods. Also Silesias, Satteens, Corset Jeans, Cambrics, Sleeve Linings, Pocketings, Flanneletts, and all descriptions of Dyed Goods.

NAPPING A SPECIALTY.

Being equipped with the French and other Foreign and Domestic Napping Machines, we are prepared to give any kind of Nap required, including the French FlannelFinish.

R. GREENWOOD & BAULT,

GLOBE DYE AND BLEACH WORKS,

FRANKFORD, - PHILADELPHIA.

Specialists in Cotton Warps and Skein Dyeing.

BAY STATE DYEING AND FINISHING CO.,

Yarn and Piece Dyeing a Specialty.

NORTH ANDOVER, DEPOT, - - MASS.

M. B. SCHWAB, Pres. D. W. SCHWAB, Sec.
H. RAWITSER, Treas. ED. GLUECK, Gen. Mgr.

Riverdale Woolen Co.,

MANUFACTURERS OF

SHODDIES

OF EVERY DESCRIPTION.

Capacity 7,000,000 pounds per annum.

Custom Carbonizing and Garnetting a Specialty.

RIVERDALE, NORTHBRIDGE, - MASS.

New York Office: 140 Duane Street.

FAST FANCY COLORS.

We make a specialty of dyeing **Mode** and **Tan** shade on hosiery and yarns, as also all other fancy shades. **Colors absolutely fast.** For particulars address

OAKDALE DYE WORKS,

913 W. York St., Philadelphia, Pa.

Write for the Lowest Prices for

HIGH CLASS WORK.

T. BROPHY,

DYER of all kinds of **YARN** and **COTTON WARPS.**

Kensington Dye Works. Jasper St. above Clearfield,

PHILADELPHIA.

HOME BLEACH AND DYE WORKS,

PETER B. McMANUS, Proprietor.

Dyers and Bleachers of Cotton Yarns,

PAWTUCKET, R. I.

Pawtucket Dyeing & Bleaching Co.,

BLEACHERS AND DYERS OF

COTTON & COTTON YARNS, STOCKINET & JERSEY CLOTH.

OFFICE WITH **BLODGETT & ORSWELL CO., Manufacturers of Glazed Yarns,**

F. G. BLODGETT, Prest. **PAWTUCKET, R. I.** E. W ORSWELL, Treas

Enormous Carpet for the Czarina.

An enormous carpet, ordered by Her Majesty, the Empress of Russia, for one of the rooms in the Winter Palace, was dispatched recently from the Moscow Spaso-Syetunsky Works to St. Petersburg. The carpet is 32x35 feet, weighs 290 pounds, contains 500 different tones, and is without a seam. The design was furnished by the Empress herself. It took 425 working days to execute the order. Only Russian workwomen were employed upon it.

For Sound Money and Protection.

The Wholesale Dry Goods Republican club was organized a few weeks ago, in pursuance of the call for merchants to meet at 350 Broadway, New York City. A large company gathered on the second floor of the Jaffray building and elected officers as follows: President, Mayor W. L. Strong; first vice-president, W. B. Fuller; treasurer, Seth M. Milliken; secretary, Andrew Jacobs. The meeting adjourned to September, during which interval the first floor of the Jaffray building will be put in order, when the organization will go to work methodically for the election of McKinley and Hobart, and sound money.

—Two branches of the English textile industries are prospering at the present time. Cotton spinning has not been so prosperous for some years, while the calico printers have had the best six months' business in recent times. The past year would have been the biggest year on record for them if it had not been for the falling off of the East Indian trade. Statistics show that British exports of cotton piece goods which have undergone some process show a steady increase, while the export of goods in the gray is on the decrease. This tendency is explained by the ever increasing exports of textile machinery, so that the countries which once bought goods in the unfinished state are now making them for themselves, with equally good machinery as English manufacturers, while they have not yet acquired the skill of their dyers and calico printers, and still go to England for goods of the highest grade. The British export trade in textile machinery has increased wonderfully, and the last six months are the largest on record in point of machinery exported.

—The last quarterly statement of dividends paid by Fall River mills showed that $274,450 were paid on a capitalization of $22,133,000, which is an average of about five per cent. a year. Nine corporations passed the dividend. For the corresponding quarter a year ago, the mills paid at the rate of ten per cent.

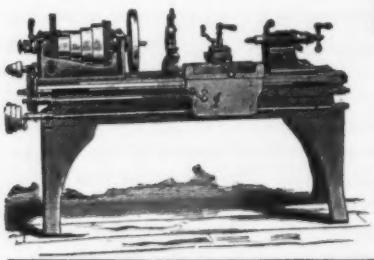
EICHMANN & STERNBERG
488-492 Broadway, NEW YORK.
FANCY WORSTED And COTTON YARN
Harness Twines.
Spun Silks. Embroidery Silks.

WOOLEN AND MERINO
YARNS. Special line for Bicycle and Golf Goods in all shades
For Hosiery, Gloves, Underwear, and all kinds Knit Goods. Cop, Cone and Skeins.
The J. & H. Clasgens Co.
New Richmond, O.

STEEL CASTINGS
FROM 1 TO 40,000 POUNDS WEIGHT.
Of Open Hearth, Chester or Bessemer Steel
True to Pattern. Sound. Solid
Gearing of all kinds, Crank Shafts, Knuckles for Car Couplers.
Cross-Heads, Rockers, Piston-Heads, etc., for Locomotives.
STEEL CASTINGS OF EVERY DESCRIPTION.
CHESTER STEEL CASTINGS CO.,
Works, Chester, Pa. Office, 407 Library St., Phila., Pa.

P. BLAISDELL & CO.,

Manufacturers of



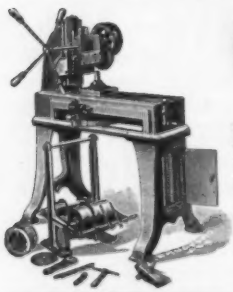
MACHINISTS' TOOLS,

Blaisdell's Patent Upright Drills,
with Quick Return Motion.

ENGINE LATHES, PLANERS,
Boring Mills, Gear Cutters, and Hand Lathes

WORCESTER, MASS.

MODERATE PRICED



Gear Cutting Machine.

Especially adapted for use in Repair Shops. Now in use in nearly **ONE HUNDRED** representative mills, including **Twelve** in Fall River, Mass. On application, we shall be glad to submit full particulars, prices, and photographs of latest improvements. Send for our Sheet of References.

THE D. E. WHITON MACHINE CO.,

19 Oak Street, New London, Conn.

THOMAS TOWNSEND,

Late of Hood & Townsend, Established 1885.

MANUFACTURER OF **MACHINE WOOL COMBS,**

Hackles, Gills, Fallers and Porcupines. Tentering Pin Plates. Also Cotton Combs neatly re-necdled. Dealer in the Best English and American Cast Steel Pins and Comber Needles.

ALL WORK GUARANTEED.

(Formerly at Manchester, Ct.) **157 Orange St., Providence, R. I.**

THE **HOLBROOK** MFG. CO.

466-470 Washington Street,

NEW YORK.

MILL SOAPS.

MILL NEWS.

Cotton.

New Mills.

—*Alabama, Anniston. The American Net & Twine Co., of Boston, Mass. is now preparing for the commencement of work on its new plant. W. S. Shepard, of the company, has arrived in Anniston, bringing the plans for the building, and authority to award contracts for the same. The main building will be 300 feet long, 104 feet wide, two stories high, with a storehouse added 50x300 feet.

—Florida, Tallahassee. Robert Ranson will probably erect a rope mill in this place.

—Georgia, Madison. At a mass meeting recently held here for the purpose of discussing the advisability of erecting a cotton mill, the following committee was appointed for the purpose of organizing properly, soliciting stock, etc: Judge G. D. Stovall, Col. Q. L. Williford, S. A. Turnell and others.

—Georgia, Poulan. A report states that Poulan is to have a cotton factory, that a company has been organized for that purpose, and that work on the building will be started immediately.

—Massachusetts, Haverhill. The weave room on Fleet St. is operated by George Daniels, who now has ten looms, making cloakings and overcoatings. He also makes some fancy worsted goods. He buys all his yarn.

—New York, Valatie. George V. B. Clark is equipping a new plant at this place for the manufacture of a special cotton batting.

—*North Carolina, Cherryville. The work of construction on the new cotton mill has actively begun, and the walls are now going up. J. M. Rhodes is the manager of this mill, and the mill is the same as we reported last spring, and of which J. A. Black is president.

—*North Carolina, Elizabeth City. The engine for the Elizabeth City cotton mill has arrived, and other machinery is now being placed in position. The plant will be ready for operation about Nov. 1st.

—*Pennsylvania, Philadelphia. C. J. Milne & Sons have completed their new five story mill on Washington Ave., between 10th and 11th Sts. The mill will have a capacity of 1300 looms, and other machinery in proportion. Very fine cotton yarns will be manufactured.

—*Rhode Island, Warren. The work on the new mill of the Warren Mfg. Co. is nearly completed. Most of the machinery has been placed and cotton has been started through the pickers.

—*South Carolina, Camden. The Camden Cotton Mills are now in full operation. It will be remembered that this mill started last spring for the first time, and that shortly after starting their dam broke, necessitating a shut down until the present time.

—South Carolina, Clio. The Marlborough Mills Co. is a company recently organized here for the purpose of erecting a new cotton mill. They will begin operation with about 15,000 spindles.

—*South Carolina, Columbia. The Carolina Mills Co., a concern organized to build a mill here for the manufacture of cotton goods, has bought its land, and is making some progress. They have secured subscriptions to the amount of $100,000, which is being paid into the treasury at the rate of $1 per month per share. They are now endeavoring to sell an additional $150,000 worth of stock, to be paid in cash. The mill will use electricity for motive power, and it is intended to run on finer goods than have yet been made in the South.

—South Carolina, Fingerville. The Fingerville Mfg. Co.'s new cotton mill will contain 10,000 spindles.

Enlargements and Improvements.

—Connecticut, Jewett City. An addition is to be built to the finishing rooms of the W. A. Slater Cotton Mill.

—Georgia, Columbus. At a full meeting of the stockholders of the Eagle & Phenix Mfg. Co., which was held Aug. 5th, it was voted to spend $75,000 for improvements on the plant. From the receiver's statement as to the financial condition of the company, the following extract is taken: total liabilities $1,588,737; quick assets valued at $410,063.51; excess liabilities, $1,178,673.49. The report of the receivers recommends that the mills be run as heretofore. The principal work accomplished at the meeting was the naming of a reorganization committee. Such a committee was appointed, whose duty will be to prepare plans for reorganization, to be submitted at some future meeting of the stockholders, also to represent the share holders in the court; in short, to represent the interests of the stockholders on any necessary occasion. The following are the names of the committee appointed: C. A. Collier, Atlanta; B. F. Abbott, Atlanta; C. E. Battle, Columbus; E. A. Lewellen, Thomaston; W. G. Solomon, Macon.

—Massachusetts, Lawrence. At the Atlantic Mills workmen are now engaged in laying the foundation for two new engines, which the company propose to put in immediately.

—Massachusetts, North Adams. The Windsor Co. are tearing down a portion of their factory to make room for the erection of a larger addition.

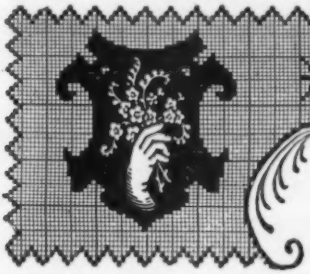
—*Mississippi, Stonewall Station. The Stonewall Cotton Mill expect to have their new mill in running order by Sept. 1st. They manufacture 36 inch, 48x48 sheeting, four yard sheeting, and a general variety of other counts, all of which are manufactured from 18s to 28s yarns. This company now has a capital of $400,000, and their mill contains 17,216 spindles, 500 looms. O. F. Cawthon is president, O. F. Cawthon, Jr., treasurer, T. L. Wainwright, secretary and superintendent. They sell direct.

ANYTHING

Entire Outfits for New Mills, or small and odd items that you don't know just where to obtain, can be found at the

AMERICAN SUPPLY CO.
PROVIDENCE, R. I.

in Mill Supplies.



JACQUARD DESIGNERS AND CARD CUTTERS.

FREDERIC HAND & CO.,
157 & 159 Van Houten St., - PATERSON, N. J.

GOLD MEDAL

Reeds and Harness,

Manufactured by

J. A. GOWDEY & SON,

P. O. Box 707, - PROVIDENCE, R. I.
P. O. Box 256, - CHICOPEE, MASS.

Send for Price List before purchasing elsewhere.

WHITINSVILLE SPINNING RING CO.
ESTABLISHED 1873.
WHITINSVILLE, MASS. U.S.A.
OUR PATENTED SPECIALTIES.
DOUBLE RIBBED RINGS U.S. STANDARD. TRAVELER CLEARERS. METALIC BURNISH LIKE THAT PRODUCED BY THE TRAVELER.

JACOB WALDER, - - Paterson, N. J.
Sole Manufacturer in United States of

BRASS AND STEEL MAILS

Liberal Discount to Dealers.

—NORTH CAROLINA, China Grove. At a meeting of the directors and stockholders of the Paterson Mfg. Co., recently held, it was decided to enlarge their plant by the erection of a new mill that will enable them to double their present capacity. Finer grades of goods will be made in the new mill than what they are now making.

—NORTH CAROLINA, Concord. The Paterson Cotton Mill will expend $90,000 for enlargement and new machinery.

—NORTH CAROLINA, Durham. The Oneida Cotton Mills are at work removing the 383 looms in its old mill to the new mill, thus making a weave room of 600 looms. Its No. 1 mill will operate 10,000 spindles.

—*NORTH CAROLINA, Forest City. The Florence Cotton Mills have commenced to work on the enlargement of its mill, which will be increased to 6000 spindles.

—NORTH CAROLINA, Monroe. Work has commenced on the new addition to the cotton mill.

—NORTH CAROLINA, Raleigh. The Raleigh Cotton Mills Co. are making preparations for placing new cards and fly-frames in their mill.

—*RHODE ISLAND, Pawtucket. The enlargement and improvements being made at the Slater Cotton Co.'s mills consist of a small addition to the new mill engine room, in connection with the introduction of a Worthington condensing apparatus.

—*SOUTH CAROLINA, McColl. The McColl Mfg. Co. has increased its capital to $100,000, but will not increase the size of its plant at present, as it has been reported they would do.

—*VIRGINIA, Petersburg. The new weave shed being built by the Pochahontas Mills is about completed.

Mills Starting Up.

—NEW HAMPSHIRE, Dover. The Cocheco Print Works have been started up.

—NORTH CAROLINA, Kimesville. The Mt. Pleasant Mfg. Co. has resumed operations after a shut-down of three months.

Mills Shutting Down.

—NORTH CAROLINA, Cumberland. The Cumberland Mills have been closed on account of a judgment of $7000 obtained by the First National Bank of Winston. The closure was brought about by a process issued by one of the North Carolina judges of the Superior Court at Chambers.

Woolen.

New Mills.

—MINNESOTA, Faribault. It is being reported that S. M. Pye is about to improve his water power at Roberd's Lake, and build a small factory for the manufacture of woolen goods.

—NEW JERSEY, Mt. Holley. It is announced that the Mt. Holley Carpet Mills, which were recently burned, will be rebuilt at once. These mills were operated by C. H. Mashland & Sons.

—PENNSYLVANIA, East Macungie. Benjamin S. Peist has taken Charles Measler into partnership in his carpet weaving business.

Enlargements and Improvements.

—GEORGIA, Rossville. The Park Woolen Mills Co. intend to add an electric light plant to its mills, and they are now in the market for machinery.

Wooosocket Napping Machinery Co.

Pat. Knot Saving Shear
with or without **List Saver.**

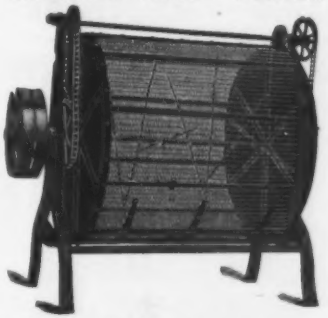
NAPPERS
Of all kinds, including the **French with Latest Improvements.**
WOONSOCKET, - R. I.

GEORGE L. SCHOFIELD,
DEALER IN NEW AND SECOND-HAND
MACHINERY,
123 N. Front Street, Philadelphia.
Agent for Weston Hydro-Extractor in Pennsylvania.

FINISHING MACHINERY for Brushing, Calendering, Drying, Dyeing, Fulling, Lapping, Rolling, Folding, Measuring, Pressing, Steaming, Shearing, Singeing. Blades, Spirals, Brushes furnished or repaired; Wire Looms, Forming Press for Febrille Goods, Metals or Hats. Perforating, Plate Printing, Engraving Machines. Paper Mill, Box Printers and Binders Machines.
GEO. C. HOWARD, 1783 Barker St., Phila., Pa.

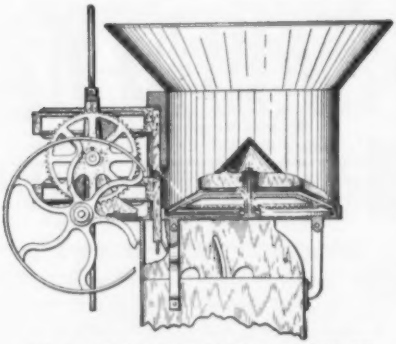
Established 1844.
BENJ. BUCKLEY'S SON,
(WM. J. BUCKLEY)
GUN MILL, PATTERSON, N. J.
Manufacturer of all kinds of
SPINDLES, FLYERS, RINGS, TUBES, CAPS, &C.
FOR
Cotton, Silk, Flax, Woolen and Worsted
MACHINERY.
Roving Spindles and Flyers a Specialty.
Light Forgings. Repairing of all kinds.

IMPROVED WASTE DUSTER



For Cleaning Wool Waste. Superior to any now in use. Manufactured by the Stillman-Randall Machine Co., Westerly, R. I. Send for circular.

FACTORY SITES
FOR SALE
in the fast growing village of
DOLCEVILLE, - N. Y.
Water unexcelled for Wool Washing.
Power furnished at very low price.
Good Locations along Railroad.
Best Shipping Facilities.
FOR PARTICULARS ADDRESS
ALFRED DOLGE, Dolgeville, N. Y



No. 1. SHOWING WORKING PARTS OF THE MACHINE.

We Claim:

THAT, these machines will pay for themselves within six months.

THAT, as the machine requires only occasional filling, the services of one man two hours per day is sufficient for the working of two machines.

THAT, as the machine is constructed entirely of metal, without aprons, it is practically indestructible by fire.

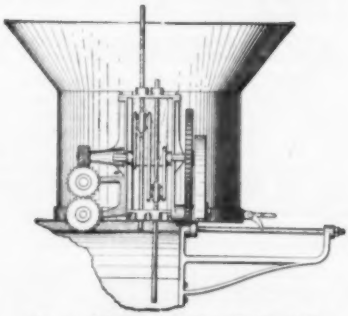
BLAISDELL'S AUTOMATIC FEEDER,

For Thread Extractors, Card and Picker Waste Machines.

A labor-saving device for reducing to a minimum the cost of feeding thread extractors, etc.
For full particulars address

THE BLAISDELL FEEDER CO.

29 Oliver St., Boston.



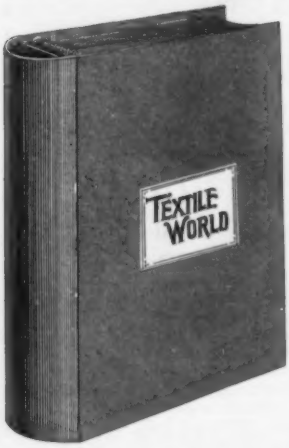
No. 2. SHOWING BRACKET FOR REMOVING MACHINE.

MAKE A

Textile Encyclopedia.

You can do it by getting our

NEW BINDER.



It is the best binder ever invented. It takes only half a minute to insert the magazine, and thereafter it is kept clean, and can always be found when wanted. A single binder will hold **one volume (6 numbers) of the Textile World, or it can be used to hold the four Directory Numbers, thus giving the complete textile directory of the country under one cover.** When it is complete it can be filed away in your library as a most valuable book of reference for the year 1895.

As a method of keeping your Worlds for future use, it is worth ten times its cost. It makes all the difference between lost, torn and dirtied copies, scattered about the house or office in such confusion that you can never find what you require, and a handsome, orderly file, which becomes at the end of the year a handsome volume for your library.

A single copy found when wanted repays the cost of the binder twice over. We cannot too strongly urge upon subscribers the great importance of preserving each issue of this magazine in our binder. In a few years you will have an encyclopedia unequalled in character, variety and timeliness. In this way you can in a short time possess a real library without expense to yourself.

The binder has strong cloth covers and the name "Textile World" stamped as shown in illustration. The six numbers make a volume of about 1000 pages.

The Binder will be sent postage paid to any address on receipt of 50 cents. (Stamps will do.)

SPECIAL OFFER.

To any present subscriber who will get us a new subscription to the TEXTILE WORLD and send $2.00 to pay for the same, we will send the Binder free.

GUILD & LORD, - Publishers,

620 Atlantic Avenue,

BOSTON, MASS.

—MAINE, Hartland. The Linn Woolen Co. are erecting a new building, which is to take the place of the old dye house recently torn down.

—MASSACHUSETTS, Lawrence. It is announced that the Arlington Mills Co. are about to erect a building to be used for a wool scouring department.

—NEW HAMPSHIRE, Keene. The Faulkner & Colony Mfg. Co. have shut down their mills, and will make extensive improvements and additions to their machinery.

—PENNSYLVANIA, Philadelphia. Henry B. Farell, spinner of woolen and merino yarn, Howard and Berkes Sts., in order to increase his capacity, will occupy the portion of the Chatham Mills which have been vacated by the Roxford Knitting Mills, in addition to what he now occupies.

—PENNSYLVANIA, Williamsport. The Muncy Woolen Mills have closed down for repairs.

—RHODE ISLAND, Peace Dale. Concerning the report that the plant of the Peace Dale Mfg. Co. is to undergo repairs and alterations, we have the following additional information: The old three-story woolen mill built in 1847 is to be taken down to a 1-story structure, and a new mill, 140 by 80 feet and 2 stories high, will be erected just to the south. The steam power and electric lighting plant will also be changed by the addition of two new engines and a new dynamo. The present capacity of the mill will not be materially increased by these changes, which are of the nature of repairs rather than additions.

Mills Starting Up.

—DELAWARE, New Castle. It is being reported here that the Knowles Woolen Mills will resume operations August 17th.

—LOUISIANA, Sigourney. The Hawkeye Woolen Mill will be started up at an early date. This mill has not been in operation for the past two years.

—MAINE, Readfield. The woolen mill will be started up again soon. Mr. Mannock, of Dover, will have charge of the mill.

—MASSACHUSETTS, Caryville. Extensive repairs have been made at the Caryville Mills during the past three months' shut down.

—NEW YORK, Utica. The Globe Woolen Mills are being started up after a month's idleness.

—WISCONSIN, Reedsburg. The Reedsburg Woolen Mill, which has been shut down for the past two months, has started up on full time with a full force of help.

Mills Shutting Down.

—NEW JERSEY, Rahway. The plant of Bloodgood & Taylor, known as the Essex Felting Mills, has been closed down for an indefinite period. The mills have been in operation since the 60s, and it is said that this is the first time they have suspended operations.

—NEW YORK, Yonkers. The carpet mills of Alexander Smith & Sons are being closed down. They employ some 6000 hands.

Müller & Mann's RUST-PROOF PAINTS
best protection
for iron structures, roofs, pipes, etc.
READY MIXED - VARIOUS SHADES.
D. GOETZE, Sole U.S. Agent 4 BROADST. N.Y.

JOHN F. WHITE,
Manufacturer of
Patent Under Grids
FOR CARDING ENGINES.
38 River St., Providence, R. I.
Advantages Gained by Using Above:
Cleaner stock, stronger yarn, more yarn, and less card waste.

Cohoes Foundry and Machine Co.
BUILDERS OF
SLASHERS,
ELEVATORS,
WATER WHEEL COVERNORS, SHELL ROLLS.
General Foundry and Machine Work, Repairing
COHOES, NEW YORK.

ELLIOT CLOTH FOLDER AND MEASURER
For Cotton and Gingham Mills, Bleacheries, Print Works, Etc.
MANUFACTURED BY
ELLIOT & HALL,
54 1-2 Hermon St., Worcester, Mass. Send for Circular.

SAVOGRAN
CLEANS WOOL, FLOORS, ANYTHING.
INDIA ALKALI WORKS, Boston.

What Old Customers Say of Us.

PARKS & WOOLSON MACHINE CO.,

MANUFACTURERS OF CLOTH FINISHING MACHINERY.

The only Manufacturers of Shearing Machines with Self-operating List Savers.

SPRINGFIELD, VT., Aug. 16, 1895.

Guild & Lord, 620 Atlantic Ave., Boston, Mass.

Gentlemen: Yours of the 16th inst. has our attention. . . . . Sent them our illustrated catalogue of cloth finishing machinery, in answer to which we received an inquiry for our napper.

We think you have developed the finest textile paper printed, and an especial feature of great advantage to all builders and dealers in mill supplies is your advance sheet (The Textile Advance News). This little herald has secured us considerable business. We wish you good fortune and long life.

Very truly yours,

PARKS & WOOLSON MACHINE CO.,
W. W. Brown, Sec.

John C. Egley, Pres. W. R. Dilmore, Vice. Pres. Thos. A. Pearce, Sec. and Treas.

KEYSTONE KNITTING MACHINE CO.,

MANUFACTURERS OF

ALL CLASSES OF KNITTING MACHINERY.

1716 No. Fifth St., PHILADELPHIA, PA., Aug. 26, 1895.

The Textile World, Boston, Mass.

Gentlemen: In reply to your favor of the 23d, would say that we are interested and will be pleased to correspond with the party. . . . . .

Regarding your journal, would say we place it in the very first rank of trade papers. Have read its every issue with interest and profit, and consider it a splendid adverti-ing medium.

We trust that you may have many anniversaries

Yours very truly,
W. R. DILMORE, Vice. Pres.

PHILADELPHIA TEXTILE MACHINERY CO.,

MANUFACTURERS OF

CYCLONE DRYERS, VENTILATING FANS, GARNETT MACHINERY, ETC.

2720 Hancock St., PHILADELPHIA, PA., Aug. 26, 1895.

Messrs. Guild & Lord, 620 Atlantic Ave., Boston, Mass.

Gentlemen: In our opinion, your TEXTILE WORLD is one of the best ad ertising mediums we know of, in the line of textile machinery. We like the book form in which it is issued, and during the long time we have been advertisers in your paper, we have been pleased with the attention you have given us.

Yours truly,

PHILADELPHIA TEXTILE MACHINERY CO.,
C. W. Schwartz, Jr., Sec. and Asst. Mgr

James L. Branson, Pres. Edwin R. Branson, Sec. and Treas

BRANSON MACHINE CO.,

MANUFACTURERS OF

SEAMLESS KNITTING MACHINERY, HAND AND AUTOMATIC; ALSO PLAIN WELT, SINGLE AND DOUBLE FEED RIBBERS.

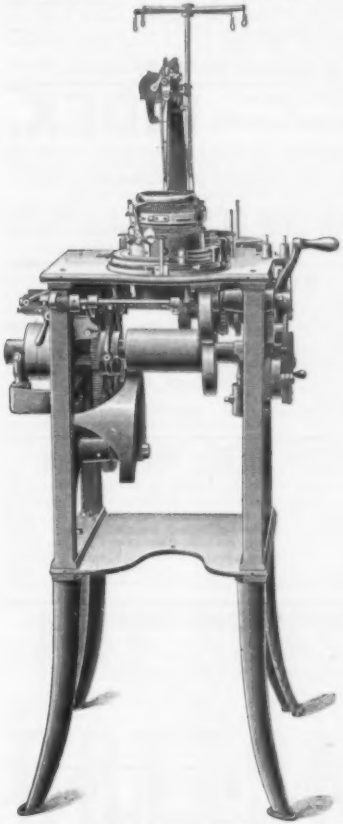
506 St. John St., PHILADELPHIA, PA., Sept. 9, 1895

Messrs. Guild & Lord, Boston, Mass.

Gentlemen: You have made a fine trade journal of the TEXTILE WORLD. The improvements made since we first began advertising in it years ago are surprising. It is unsurpassed as a textile advertising medium. Furthermore, we think your plan of publishing directories of the mills, with those unique textile maps is a great idea, only equalled by the Weekly Advance News sheet, which we find of much value. The TEXTILE WORLD is certainly no ordinary trade paper, and we can testify that you always seem to have your advertisers' interests in mind in every way. We feel perfectly satisfied with the results of our business with you.

BRANSON MACHINE CO.,
Edw. R. Branson, Sec. and Treas.

THE
ACME AUTOMATIC KNITTER
for SEAMLESS HOSIERY.



This machine is entirely past the experimental stage.

The method of transferring tops more practical than changing cylinders.

Machine will produce anything from a short foot to the longest hose without substituting or changing any parts whatever.

Extra thread in heel does not show in instep.

In a wool hose a cotton, merino or silk re-inforcing thread may be used as it is positively thrown in on the first course of the heel and toe and as positively taken out on the last course.

Stitch automatically loosened in heel and toe to accomodate any size of reinforcing thread.

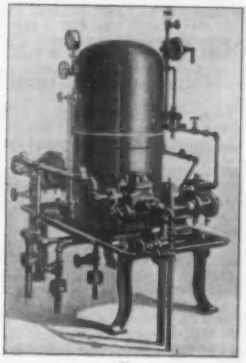
Seam in heel and toe remarkably strong and close and heel is large and full Runs equally well on any grade of goods.

Send for Descriptive Catalogue.

MAYO
Knitting Machine & Needle Co.,
FRANKLIN, N. H.

Fuel Oil Furnaces.

Improved **DUPLEX SYSTEM**
for SINGEING FURNACES



Also for Annealing, Forging, Enameling Welding, Melting, Brazing, Drop Forging etc., with

FUEL OIL.

Furnaces Designed and Built for Every Purpose.

W. S. ROCKWELL & CO.,
Constructing Engineers,
26 CORTLAND ST., NEW YORK.

Before Purchasing Your
TYPEWRITER
EXAMINE THE . . .
New Model No. **6**
Remington

Nearly 22,000 No. 6's sold during the last year.

STANDING OF THE REMINGTON.

In New York	7 to 1
In Boston	5 to 1
In Providence	5 to 1

OF ANY OTHER MAKE.

Send for Souvenir.

Wyckoff, Seamans & Benedict,
15 SCHOOL STREET,
Boston, - Mass.

Mill News.

—*MASSACHUSETTS, Wakefield. The Boit Knitting Co., whom we reported would start business here Sept. 15th, inform us that they will start with 30 new knitting machines. E. E. Boit is the treasurer. The capital is $15,000. They will sell direct.

—MASSACHUSETTS, Whitinsville. The Whitin Machine Co. has begun the erection of a brick electric light station near where the old red cotton mill is to stand. It will be 102x50 feet, one-story and a basement. When completed, two new incandescent light dynamos will be placed in the station.

—NORTH CAROLINA, Durham. We have a report that the Durham Hosiery Co. contemplates enlarging its mill in the near future.

—NEW YORK, Gloversville. F. W. Belding is placing new machinery in his knitting mill, in order to increase his present production. He will also have erected a building, 40x90 feet, for storage.

—NEW YORK, Kenwood. The Oneida Community machine shop and silk factory are closed down for repairs.

—*NEW YORK, Unionville. The Brown-Sellner Silk Mill is now completed. There are now two silk mills in this place.

—*PENNSYLVANIA, Altoona. The plans for the silk mill to be built for Schwartzenbach, Huber & Co., of 273 Broome St., New York City, are finished, and the work will be commenced at once.

—PENNSYLVANIA, Catasauqua. Men are now at work on the new extension to the Unicorn Silk Mills. The building will be made a two-story structure.

—*PENNSYLVANIA, Danville. Ground has been broken for the silk mill to be erected by F. C. Hartman. The excavations for the wall of the building, which is to be 125 by 53 feet, are nearly completed.

—TENNESSEE, Sweetwater. We have a report that a contract has been let for the building of an addition to the Mascot Knitting Mills, that will nearly double the size of the plant, the new building to be 60x28 feet. New knitting machines will be put in, besides other additional machinery.

—DELAWARE, New Castle. An attachment has been placed on the woolen mills of James G. Knowles, of this city. The mills have been closed since May.

—ILLINOIS, Chicago. It is reported that the Chicago Fringe Works have been closed by the sheriff; that the company was incorporated in 1891, with a capital of $45,000, and succeeded Fred Oberndorf.

THE J. J. RYDER CO.
DESIGNERS ENGRAVERS PRINTERS
FINE COMMERCIAL PRINTERS.
Photo Engraving in all its Branches.
Specialists in fine Machinery and general Wood Engraving, Portraits, Buildings, etc. Artistic designs in Letter and Bill Heads, Business Cards, Display Lettering for advertising purposes, etc. Best work. Lowest prices. Electrotyping at lowest rates.
210 Westminster Street, Providence, R. I

BURR'S COMBINATION INDEX.
A valuable and necessary book for every office, which saves time and labor. The Index is for Ledgers, Letters, Books, Commercial Reports, and records of all kinds.
BURR INDEX CO. 336 Asylum St., Hartford, Conn.
SEND FOR CIRCULARS.

TEXTILE BOOKS, HALF PRICE.
Structure Fibres, Yarns and Fabric, price $10.00, will sell for $5.00.
Wool Manufacture (Beaumont) price $2.50, will sell for $1.25.
Fuller's Tables, price 75 cents, will sell for 37.
Cotton Manufacturing (Brooks) price $2.25 will sell for $1.15.
Cotton Manufacture (Lister) " $3.00 " " " 1.50
Self Instructor in Textile Designing, (Baldwin) price $10.00, will sell for $5.00.
I have one copy of each. All new.
J. WILLIAMS, Box 101 South End, Boston.

"LOOK HERE, YOUNG MAN."
Do you want to learn practically how to manufacture woolen, worsted and cotton goods? If so commence at once, as I can take a few more scholars in this line. Full instructions given in Designing, Calculations and Estimations on stock, etc. Terms reasonable. Address, INSTRUCTOR, Box 719, Middleboro, Mass.

FOR SALE, SECOND-HAND MACHINERY.
Double Corliss Engine, cylinder 23x60 in. Single Corliss Engine, cylinder 20x48 in. Singles Corliss Engine, cylinder 16x36 in. Single Corliss Engine, cylinder 12x24 in. 30-40 50-80 and 100 H. P. Automatic Engines.
Large stock of Plain Slide Valve Engines, Boilers, Steam Pumps, Feed Water Heaters, Lathes, Planers, Shapers, Drill Presses, Milling Machines, Electric Motors and Dynamos, and Wood-working Machines. Let me know your wants as my stock is constantly changing. Yours respectfully, FRANK TOOMEY, 131 Nord St., Philadelphia.

TEXTILE MACHINE WORKS,
READING, PA.
Braiding Machines for all Purposes.
Machines for Covering Electric Wires and Cables, Packing Braiders, Gimp Machines, Spooling and Doubling Machines, Special Machinery.
THUN & JANSSEN.

THE ARMITAGE MANUFACTURING COMPANY,
RICHMOND, VA.
GRAVEL, SLAG AND COMPOSITION ROOFERS.
MANUFACTURERS OF
Two and Three-ply Asphalt Ready Roofing for roofs of any description, water, acid and fire proof; more durable than metal; easily applied. Tarred Felts, Building, Sheathing and Insulating Papers, Roofing Pitch, Paving Pitch, Roof Paints and Roof Coating, Black Varnish, Ammonia, Etc. Write for Samples, Prices and Catalogues **Quality and Workmanship Guaranteed.**

FIRE DEFIED!! By The American Fire-Resisting Paint.
A building protected with these goods becomes practically Fire proof.
An ocular demonstration of the fire resisting qualities of this paint and kalsomine will be given at our office to anyone interested. Samples, and information furnished from those who have used this paint successfully.
THE AMERICAN FIRE-RESISTING PAINT CO., 17 Broadway, New York, N. Y.

Notes of Resumption.

The Nockege Cotton Print Mills resumed September 3 after a nine weeks' shut down.

The Slatersville Cotton Mills started Labor Day with 650 hands, after a four weeks' shut down.

The Turner Worsted Co.'s mills, employing nearly 500 people, reopened August 31, and will soon be running full force.

—The Cole & Senior Woolen Mills, at Medway, Mass., have resumed operations after a shut down, during which extensive improvements were made and the capacity enlarged.

—L. W. Bethune, 128 Pearl St., New York, has been appointed American agent for Henry Highly & Son, card clothing manufacturers, Halifax, England.

—NEW YORK, Auburn. We are informed that the Rose Valley Woolen Co., manufacturers of woolen goods in this place, are in financial difficulties, and that application has been made to the Supreme Court by President John J. Bockee and Secretary Alonzo A. Bates for the dissolution of the company and the appointment of a receiver. Their petition has been granted, and Benjamin M. Wilcox appointed receiver with a bond of $15,000.

For Sale!

Manufacturing site situated in a town of about 8000 inhabitants, on line of New York Central and West Shore Railroads; shipping facilities East, West, North and South, with natural gas sufficient to supply fuel and light for manufacturing purposes.

For further particulars call on or address.

H. K. HEFFRON & CO.,

UTICA, N. Y.

FREE SITES FOR COTTON MILLS

Along the line of the Illinois Central Railroad Co. in West Tennessee, Mississippi and Louisiana are offered with cheap fuel, low-priced American labor, best of freight facilities, and, in many locations, exemption from taxation for ten years, with liberal subscriptions to stock, if desired.

Write for pamphlet "One Hundred Cities and Towns Wanting Industries," which gives in a nutshell statistics of desirable places. The undersigned solicits and will treat in confidence all correspondence with those prospecting for new locations.

GEORGE C. POWER,

Industrial Commissioner, I. C. R. R. Co.,

506 Central Station, CHICAGO, ILL.

FITCHBURG RAILROAD.

Hoosac Tunnel Route

The Short Line between

BOSTON AND

NIAGARA FALLS,
CHICAGO,
ST. LOUIS,
CINCINNATI,

And all Points West.

Lake Champlain Route

Between

BOSTON AND

MONTREAL,
OTTAWA,
QUEBEC,

And all Canadian Points.

Palace Sleeping or Drawing Room Cars on all through trains.

For Time-tables, space in Sleeping Cars, or information of any kind call on any Ticket Agent of the company or address

J. R. WATSON, Gen'l Pass. Agent,
BOSTON, MASS.

Fires.

—MASSACHUSETTS, Northbridge. The Riverdale Woolen Mills have been damaged by fire to the extent of $5000. Covered by insurance.

—OHIO, Ashland. The Ashland Flax Mill was recently somewhat damaged by fire.

Facts and Gossip.

—*CONNECTICUT, Madison. H. J. Griswold writes us that the report that he has sold out is wrong, that he has not sold out but is running full time and doing a profitable business.

—CONNECTICUT, New Haven. The Beach Warp Co. has been attached, and application made to force them into bankruptcy.

—*CONNECTICUT, New Britain. Work is being resumed at the American Hosiery Co.'s mills, which have been closed down for repairs since July 1st.

—CONNECTICUT, Waterville. The H. L. Welch Hosiery Co. is adding new knitting machines to their plant.

—MAINE, Brunswick. Joseph C. Sebel is starting a knitting shop in this place.

—MASSACHUSETTS, Chicopee. The contract has been let for the rebuilding of Dana S. Courtney's bobbin shop, which was burned a few months ago.

—MASSACHUSETTS, Clinton. The Gibbs Loom, Harness & Reed Co. are having a two-story addition, 15x20 feet, erected on the rear of their factory. They will also make other improvements.

—MASSACHUSETTS, Lowell. The Merrimac Woolen Mills are now run by a corporation, under the name of the Merrimac Woolen Mills Co. The act of incorporation was filed recently. The capital stock is $250,000, in shares of $100 each. The company is organized to manufacture woolens, worsteds, linen, silk and cotton goods, and machinery for producing the same. August Fels is president, S. Bachman, treasurer. The mills, which have been idle for several weeks, have resumed operation.

—MASSACHUSETTS, Taunton. It is reported that an extensive plant for the manufacture of ramie goods is to be located in this city. The details of the plan are not yet fully determined.

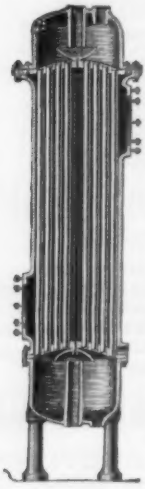
—NEW JERSEY, Newark. The John Grossgebauer Mfg. Co., whom we recently reported as being incorporated, is now in the market for machinists' tools, pulleys, shafting and hangers. John Grossgebauer is president and manager.

—NEW YORK, Catskill. A report states that the firm of Van Brocklin & Co., knit goods manufacturers, is shortly to be dissolved.

—*PENNSYLVANIA, Hagerstown. We are informed that the sale of the Maryland Silk Co.'s mills to William Ball has fallen through.

—PENNSYLVANIA, Plymouth. Ambrose West, the hosiery manufacturer, has taken over the business of the Roxburg Mills.

—RHODE ISLAND, Valley Falls. Messrs. Keach & Brown, late of the Eclipse Mfg. Co., have, it is said, leased the old mill on the Abbott Run property on Mill St. They will have it repaired and fitted up with machinery for the manufacture of ladies' underwear.



If you ask any engineer or dealer in machinery about

THE GOUBERT
Feed Water Heater,
— OR —
THE STRATTON
Steam Separator,

the answer will be:

They are undoubtedly the BEST, but they cost more money than others.

The Best Always Cost More.

Send for new Catalogues: "What is a Feed Water Heater," and "Dry Steam the Foundation of Economy."

THE GOUBERT MANUFACTURING CO.,
14 CHURCH STREET, NEW YORK.

—Frank Hopewell has been elected treasurer of the Sanford Mills, in place of John Hopewell, Jr., resigned. The new treasurer has been assistant treasurer for some time past. Some of the departments of the Sanford Mills are closed, and probably will not start up again until after election. About half their usual number of employees are at work.

—The stimulus recently given to the cultivation of cotton in China by the establishment of a number of new modern mills at Shanghai and vicinity, has led to the establishment of cottonseed oil mills, to utilize that valuable part of the cotton crop, which has hitherto gone to waste. Since 1890 there have been 45 new cotton mills established in the vicinity of Shanghai.

Partner Wanted with $10,000 to invest in an established fabric glove business. Address P 146, care of TEXTILE WORLD.

Wanted, a good spinner who understands fixing Platt mules for a first class woolen mill on the Pacific Coast. He would be expected to run a mule and do the fixing for two other mules. Pay $1.75 per day. Steady job. Address Spinner, care TEXTILE WORLD.

CHANCE FOR A KNITTER.

A woolen mill in the West, adding a knitting plant, is open to correspondence with a practical man, competent to take charge of this department. Must be a worker and thoroughly understand knitting machinery. Must invest $1500 in the enterprise. There is a splendid market for the goods, and the location is in a thriving city on the Pacific Coast. Address Tac., care TEXTILE WORLD, Boston.

Book-keeper or Paymaster. Wanted, by young man thirty-two years old and married, position as book keeper or paymaster in cotton mill. For years experience. Understands organization and management of help. Prefers New England, but would go to any part of country. Salary moderate. Address P 145.

Wanted. A situation as chemist or test dyer, by a graduate of the department of chemistry and dyeing in Philadelphia Textile School. Best of references. Address N. L. Smith, Cohoes, N. Y.

BURNHAM'S New Improved Standard ... TURBINE ...

It gives on either a Vertical or Horizontal Shaft more power for its price, yields a greater percentage for water used, either with full or part gate drawn, and is the simplest, most durable and best finished wheel made. Send for new catalogue.

BURNHAM BROS., York, Pa.

CHRISTIANA MACHINE CO.

Christiana, Pa.

MANUFACTURERS OF

THE BALANCED GATE

TURBINE WHEEL.

Suitable for Light or Heavy Service.

Globe Outer-Cases and Special Wrought or Cast Iron Flumes,

SUITABLE FOR ANY SITUATION.

GEARING of all kinds, SHAFTING, PULLEYS, and everything required for complete POWER PLANT.

Address, P. O. Box 124A.

ELIJAH ASHWORTH,

Inventor and Maker of the Patent Non-Flexible Bend

Revolving Flat Carding Engine.

Patent Flattened Wire Cards; Heat Hardened and Tempered Steel Cards;

"Special Needle-Pointed," "Plough Ground Cards."

Card Clothing of Every Description.

FACTORIES: { Fall River, Mass. / Manchester, England. } HENRY ASHWORTH, Agent.

The Textile World's Information Department

Is the BEST system of communication between manufacturers wanting men, and superintendents and overseers wanting positions.

It is in immediate charge of a practical mill superintendent, who gives personal attention to each case. There is no charge to manufacturers, nor is there any "entrance fee" to applicants, but if a position is secured a very moderate charge is made to the applicant. We will not knowingly enter the name of an incompetent or intemperate man.

Hundreds of superintendents and overseers are now satisfactorily filling positions obtained through us, and scores of the best mills use this Bureau EXCLUSIVELY, because they have found it to be the best and most satisfactory. Its methods are prompt, courteous, business-like and strictly confidential.

Correspondence solicited.

TEXTILE WORLD'S INFORMATION DEPARTMENT,
620 Atlantic Ave., Boston, Mass.

SITUATIONS WANTED.

W. H. COTTON.

A practical mill man is in charge of the Information Department and Overseer's Bureau.

The advertisers in the following columns should be addressed in care of TEXTILE WORLD, or inquiries concerning them may be addressed directly to "Information Department, TEXTILE WORLD," as full particulars of each advertiser are on file, and the addresses of suitable agents, superintendents and foremen for every branch of the textile industry will be furnished to manufacturers.

Any subscriber may file his application, and no charge is made until position is secured.

The business of this department is held strictly confidential.

The applications of good overseers in every department, who are in want of positions, are solicited.

Manufacturers are invited to use this department when in need of skilled men; each case will be handled confidentially, with promptness and judgment, and without charge to manufacturers.

WOOLEN SUPERINTENDENTS.

1085 **Designer, Assistant Designer** or Assistant Superintendent. Has experience on cassimeres, cloakings, meltons and dress goods. Will take a position anywhere in U. S. or Canada. 23 years of age

1134 Position wanted as designer or assistant superintendent by young man, graduate of the Philadelphia Textile School; now employed. High references.

880 **Superintendent or Designer** in large mill. Has had large experience in the designing and manufacture of nearly all kinds of goods made in a woolen mill. Has been superintendent and designer for the past 25 years. Has the best of references. Is 49 years of age and married. Has worked on suitings, coatings, cloakings and overcoatings in worsted and wool, fancy cassimeres, wool and piece dyed cheviots, shawls, flannels, blankets, beavers, skirts, etc. Will go anywhere excepting Canada.

1125 **Woolen Superintendent** wants position. A good man on cassimeres, dress goods, flannels and blankets. Has been overseer 3 years and superintendent 12 years for the same company. Age 37 and married. Will go anywhere except Canada. Good references.

942 **Is Expert on Woolens, Worsteds** and dress goods. Desires a position as superintendent, or assistant superintendent and designer, or designer alone. Has worked in best New England mills. Salary $2000 per annum.

377 **Woolen Superintendent or General Manager.** Has been superintendent in some of the best woolen mills in N. E. Has a thorough knowledge of the manufacture of worsteds, cassimeres, beavers, kerseys and flannels. 41 years of age. Married. Has excellent references.

1023 **A Good Woolen Mill Superintendent.** Experienced on fancy cassimeres, worsteds, fancy and piece dye, cheviots, overcoatings, kerseys, beavers, cloakings, friezes, etc. Salary, moderate, Age, 38 years. Married.

1159 **Woolen Superintendent.** A first class man on carriage robes, furniture plush, bed and horse blankets. Has excellent references. Has held present position as superintendent for several years; good reasons for desiring a change. Age 39; married.

1151 **Asst. Superintendent or Designer** wants position. Age 33; married. Worked on cloakings, fancy worsteds, cheviots, dress goods and cassimeres. Can refer to past employers.

1142 Position wanted as assistant superintendent or designer in woolen mill (N. E states preferably), by young man 26 years of age, of several years mill experience and a graduate of the Philadelphia Textile School. The salary expected would be small to begin with, as a start is the chief object at present.

1055 **Woolen Superintendent or Assistant.** Superintendent and designer. Will take a position as designer in a good mill. Age 36, married. Has worked on all kinds of woolen goods, such as beavers, kerseys, cheviots, chinchillas, flockoneys, cassimeres, medium grade worsteds serges and all kinds of nap goods. Salary governed by position.

1067 **Woolen Superintendent.** Is a practical weaver and designer. Has worked in some of the best mills in New England. Has experience on worsteds, beavers, kerseys, union cassimeres and fancy cassimeres. Is at present unemployed. Prefers position in N. Y. or N. E. states. Will work for $1800 per year and upwards Age, 44 years; married. Has the best of references as to ability and character.

1067 **Superintendent.** One who understands worsteds, beavers, kerseys, union cassimeres and fancy cassimeres, and is a good manager. Age 45; married. Has a good record and is well recommended.

1029 **Superintendent or Designer.** Here is a good man for a responsible position. Has worked on all kinds of men's wear, woolens and dress goods. Is 35 years old and married, and has had an experience of 10 years as superintendent and designer. Will work for salary according to size of the mill.

COTTON SUPERINTENDENTS.

1114 **Superintendent and Overseer,** wants position on cotton goods, has had a first-class experience, and can furnish first-class references. Will go anywhere; age 39 and married; salary reasonable; is a first class man on seamless bags.

1139 **Cotton Superintendent.** Position wanted by competent man, now in one of the best fine colored and fancy mills in the country; age 33; married. Will go anywhere. Refers to present employers.

758 **Gingham Superintendent** with experience on fine dress goods and shirtings. Age 38, married, and a desirable man.

934 **Ginghams, cotton dress goods,** shirtings, cotton and woolen, both fine and coarse, also cheviots. High up in his knowledge of these goods. Experience gained in Scotch mills. Is a practical dyer and finisher, and a practical designer. Desires a position as agent or superintendent, or as superintendent and designer. Age 42; married.

863 **Superintendent** in cotton mill, now employed. Wants position as superintendent or superintendent and designer, where cassimeres, denims, ticks, cottonades, cheviots, shirtings, etc. are manufactured. Age 45; married. Will not go South. Refers to good men.

1016 **Very desireable man,** wishes a superintendency. Strong point weaving, spooling, warping and dressing, but has also done good work in designing. Shirtings, sheetings, ginghams, ducks, demins, etc., etc. Is 35 and married.

1108 **Cotton Superintendent** or would accept position as overseer of large mule spinning department. Has good references and a first-class record, and is a thorough mechanic; familiar with all kinds of yarns, especial hosiery and prints; age 40 and married.

1133 Is a good man on cotton goods; age 43; married; American, wants position as superintendent. Refers to first-class companies; is well posted on various kinds of machinery.

1144 **Agent or Superintendent.** Has had a good experience in every department of a cotton mill, and understands manufacturing ducks, carpet yarns, hosiery yarns, seine twine and netting and various other kinds of white goods. Age 31; single. Refers to past employers.

WOOLEN CARDERS.

892 **Carder.** Has had experience on light and heavy cloth goods and knit underwear. Has worked in good mills and is a very practical man. 50 years of age, married. Will go anywhere. Good references.

710 **Low stock his strong point,** but has carded all kinds of stock. Age 40; married. Salary $3.00.

1082 **Woolen carder experienced on** all classes of underwear. Has worked for eight years in one mill, 29 years of age and married. Good references.

1030 **Woolen Carder.** A first class man with good references and wide experience desires position as overseer of woolen carding. Has worked on from fine wool to low shoddy. Age 27. Married and can take position at once. A trial will show that he is the right man.

1136 **Overseer of Woolen Carding** with good English references. Wants position. Used to all-wool, cotton and wool and shoddy. Age 51; married. Can take position at once.

579 **Carder of the first rank,** has worked in the very best mills, well posted. Strong point; Australian and low stock.

1147 **Woolen Carder.** Age 45; married. Overseer 18 years in one place. Long experience on all wool, wool and cotton mixed, shoddy, etc., etc. Will go anywhere except Canada.

1143 **Overseer of Woolen Carding,** or would accept a good position as second hand. Has good recommendations from past employers; age 33; married. Don't care to go South. Experienced on fancy cassimeres, dress goods and homespuns, Davis & Furbush and Platt's English cards, and the different kinds of feeds.

COTTON CARDERS.

1122 **Overseer of Cotton Carding** wants position; will not go South or West; familiar with sheeting, print, shirting, and hosiery yarns, also warp yarn; good references; age 32 and married.

910 **Is a good carder** on plain, colored and fancy white stock. Age 41. $2.50 and up.

1135 **Second Hand of Cotton Carding** and combing. Wants position. Has first class references. Age 28.

1001 **Has Carded** for ginghams, sheetings, checks, prints, etc., and is first class. Age 34, married. Wages $2.50 and up.

1140 **Overseer of Cotton Carding** or carding and spinning. Is recommended by first class mill men. Age 22. Has had experience on yarns ranging from No. 10s to 50s. Understands Pettee, Whitin, Lowell, Kitson and Howard & Bullough machinery. Prefers New England states.

1072 **Cotton Carder.** Experienced on mixed and colored hosiery and fine yarns, and print cloths. Has worked wholly in New England, but will take position anywhere.

WOOLEN SPINNERS.

1112 **Overseer of Woolen Spinning** wants position. Has first-class references. Age 37. Wages reasonable. Will accept second hand's position.

1111 **Overseer of Spinning** wants position. Age 48 and married. Has good recommendations from last employers. Has worked on cassimeres, wool shoddy, fancy elderwown and flannels. Will go anywhere.

1152 **Woolen Spinner** wants position as overseer or 2d hand, in Southern or Western States, or Pennsylvania. Age 20; single. Understands Johnson & Bassett operators and mules. Has worked on a variety of goods. Good recommendations as to character and ability.

1153 **Comber.** Understands repairing and running combers, speeders and cards. Overseer seven years in one of England's fine mills, on counts ranging from 120s to 150s. Will accept a position as overseer or 2d hand. Refers to responsible parties as to ability and character.

884 Wants position as overseer of woolen spinning. Age 45; married. All classes of goods; now employed. Best of references.

1097 **Woolen Spinner** on stock for cassimeres, dress goods and hosiery yarns. Age 30; married.

967 **Woolen Spinner.** Age 28; single. Wants position where there is an opportunity to rise in the business.

1065 Has worked 23 years in the spinning room. Thoroughly understands doubling and twisting. Has had experience on meltons, cheviots, hairlines, fine overcoatings, fancy cassimeres and shoddy. Has excellent recommendations. 37 years of age; married. Salary $2.50 per day.

COTTON SPINNERS.

1123 **Overseer of Spinning** wants position. Understands Parr & Curtis and Lee mules, and is familiar with all kinds of frames, also spoolers and warpers. Will go anywhere. Age 47; married. Can refer to past employers.

1128 **Overseer of Ring Spinning.** French. Age 28; single. Prefers New England States. Experienced on Mason and Whittin frames. Has had a good experience as second hand. Refers to past employers.

1158 **Overseer of Ring Spinning,** spooling, warping and slashing wants position on white work, fine or coarse. Age 46; single. Will go anywhere. Good references. Familiar with Mason, Bedford, Lowell and Fales & Jencks machinery.

1068 **Cotton Ring Spinner.** Understands spooling, warping and twisting. Has worked on yarns from 4s to 70s. Age 30 years. Will take good second hand job. Salary from $2.00 to $3.00 per day.

1036 **Learnt his trade as spinner in** one of the best mills in Mass. Has worked fine and coarse, colored and white goods; 14 years experience. Is 38 years of age, married Good references. Will work for $3.50 per day at the lowest.

1121 **Overseer of Ring Spinning,** wants position. Can run spinning, spooling, warping or reeling. Good references. Age 34 and married.

COTTON WEAVERS.

176 **Cotton Weaver also a good loom** fixer. Experienced on sheetings, shirtings, ducks, Kentucky jeans or any kind of plain weaving. 40 years of age. Married. Best of references.

837 **Sheetings, twills, satteens,** fancy goods, and leno. Age 34, married.

1113 **Overseer of Weaving** woolen or cotton goods; age 30 and married. Will work for moderate pay until ability is proven. Will go anywhere. Has a thorough knowledge of box looms and plain. Can furnish good references if required.

1110 **Overseer of Cotton Weaving,** fancy or plain. Age 42; German. Wants position as overseer, or will take second hand's position. Has had charge where first-class goods are made. Good references.

745 **Overseer and Designer** wants position on cotton goods; age 48 and married; refers to past employers; will go anywhere; has two fancy web drawers in family.

1127 **Overseer of Weaving.** French. Age 36; married. Understands sheetings, drills and prints. Will go anywhere. Out of work; mill stopped. Refers to past employers.

WOOLEN WEAVERS.

1130 **Overseer of Woolen Weaving** wants position. Would accept 2nd hand's position in a good mill. American; protestant; age 36; single. Good man on Knowles fancy and plain looms, also Davis & Furber. Cassimeres, worsteds, meltons and flannels Will not go South, West or Pennsylvania.

819 **Overseer of Woolen Weaving** wants position. Age 38; married. Understands worsted and plain goods, beavers, kerseys, cassimeres, etc. Can furnish good references.

1047 **Overseer of Woolen Weaving.** Wants position in N. E. States only. Age 30; married. Good man on cassimeres, kerseys and cheviots. Will work for reasonable salary.

1008 **Wants boss job in flannel mill.** Northern New England preferred, also a good man for dresser or fixer, has worked on flannels, serges, cheviots, fancy dress goods. Is 34, married.

1115 **Overseer of Weaving** wants position in woolen mill; age 50 and married; mill stopped, cause of being out of a position; is a reliable man, first-class references; has worked on dress goods, carriage cloths, blankets, etc.

FINISHERS.

896 **Woolen Finisher.** 30 years of age, married. Has worked on cassimeres, dress goods, worsteds and cheviots. Good references.

1041 **Woolen Finisher.** Has had experience on fancy and piece dyed goods, cassmeretes, cheviots, worsteds, kerseys and dress goods. Wants position as overseer or second hand in New England States. Age 26 years. Will work for $2 50 per day.

592 **Knit Goods Finisher.** Is desirous of obtaining a position as superintendent or overseer of finishing and seaming rooms, in a mill making knit goods on circular machines. Has had a long experience in manufacturing, and understands the business in all its branches. Age 42 years, married.

1086 **Overseer of Wet Finishing.** Age 34. Experienced on all kinds woolen goods and faced goods. Will go anywhere. $3 per day.

DYERS.

1132 **Boss Dyer in Cotton, Woolen,** or Mixed Hosiery, or underwear mill; age 45; married; 9 years overseer in large knitting mill in America; 14 years overseer in Nottingham, England. Thoroughly acquainted with all kind of hosiery and underwear, also raw stock, skein or garment dyeing. Good references from former employers.

1049 **Boss Dyer and Finisher.** Cassimeres, kerseys, piece dyed goods, etc. Would take management of 2 or 3-set mill. Is a practical carder and spinner, with knowledge of weaving. 50 years of age. Good references.

1105 **Boss Dyer, Woolen, or Will** take position as second hand for a while. Age 23. Not married. Good references. Wages reasonable.

1149 **Woolen Dyer.** American; age 44; married. Familiar with wool and worsted yarns, piece dyeing, cotton, cotton yarns, shoddy and extracts. Good references.

1146 **Bleacher and Dyer** wants position. Age 35 and married. Is highly recommended by reliable manufacturers; experienced on all classes of underwear; also skein yarns.

1107 **Dyer,** wants position. Has worked on indigo vats piece dyes, ram cotton and wool; age 35 and married; refers to former employers. Prefers Middle or New England States. Can take position at once.

1145 **Overseer of Dyeing** cotton. Accustomed to cotton thread, cotton, yarn and chaine warp. Has held the position of overseer in first-class mills and has a general knowledge of cotton dyeing. Age 50, married. Now open for an engagement; have references.

889 **Woolen Dyer.** Age 47; married. American Protestant, well up on fancy dress goods, cassimeres, cloakings, cheviots, etc. Good references and well recommended. Don't want position in the West or South.

1156 **2nd Hand of Dyeing** or overseer of washing and bleaching wants position. Familiar with knit goods, wool. Age 33. Don't want a position in Canada or the Western or Southern states. Can take position at once; good references.

KNITTERS.

1150 **Knit Superintendent, or Finisher,** wool or cotton. Age 28; married. Is a thorough man on all kinds of underwear, and understands all kinds of sewing machines. Refers to past employers.

1148 **Knitter or Machinist.** Age 28; married. Understands Lamb machines, full fashioned underwear, and ladies' and children's underwear. Good references. Owing to the mill shutting down is now out of work.

1137 **Superintendent** in knitting mill wants position on knit underwear. Thoroughly understands latch needle, Thompkins Bros., Nye & Tredick, Scott & Williams and Crane Mfg. Co.'s machines for plush und stockinette. Has first class references as to character and ability. Age 29; married.

1131 **Manager of Knitting Mill,** or will accept position as finisher and shipping clerk; age 38. Has worked on cotton and wool, flat and fleece, also rib goods. Familiar with many kinds of machinery. References from first class men.

1129 **Overseer of Knitting** wants position. A good man on latch needle knitters. Understands sewing machines. Has worked on novelty swiss rib underwear and is a thorough man on Scott & Williams and Nye & Tredick machines. Wages reasonable; age 30.

1089 **Overseer of Knitting.** Age 27 and married. Experienced on light and heavy weights, woolen and cotton. Will go anywhere. Wages $2.50 per day.

1074 **Superintendent of Knitting** Mill. Is a practical finisher. Strong point hosiery, but has also worked on underwear. Has good references. 52 years of age. Married. Will take a position anywhere in the U. S.

1024 **Overseer of Knitting.** Is at present employed, but desires to change. Has had over six years' experience on wool and cotton, heavy and light. Will accept any reasonable salary.

915 **Superintendent of Knitting Mill** making ladies', children's and men's cotton and wool seamless hosiery, wants position. Age 25. Familiar with nearly all makes of machinery. Refers to his past and present employers.

MISCELLANEOUS.

1038 **Master Machinist or Foreman.** Will give 30 days trial for expenses. Has experience on light and heavy goods repairs. Age 31 years, married. Salary $3.50 per day.

1021 **Worsted overseer** of spinning and drawing, or superintendent. Mohair and long and short wools

840 **Beaming or Charge of Beaming.** Has worked on ginghams, ticklings, shirtings and dress goods. Age 29; married; salary as beamer $2.50; in charge $2.75.

1044 Overseer of Boarding and Finishing Hosiery. Experienced on cotton, woolen and mixed, seamless and fashioned goods. Will work for two dollars per day. Age 41 years, married. Good references. Will go anywhere in the United States, excepting the West.

533 **Situation wanted** as superintendent in flax, hemp or jute mill. Can make all kinds of yarn, threads, sail twines. Best of references as to character and ability. Twenty years experience in the same line, both wet and dry spinning

1144 **Salesman** wants position as traveling salesman for dyestuffs, mill supplies, oils, etc., in which line he has had a good expeirence. Has first-class letters of recommendation from past employers, and others; age 45; widower.

1141 **Overseer of Wool Sorting** wants position. Understands sorting and grading in all its branches; 20 years experience as boss sorter. Can give the best of references from past and present employers. Is a good judge of the shrinkage of wool, and understands the selection of wool in market for mill. Has six workers in family.

1087 **Overseer of Beaming, Designing** or Weaving. 35 years of age. Married. Has worked on dress goods, silk striped shirtings, pantaloon goods, ginghams, etc. Highly recommended. Will go anywhere in the United States.

1118 **Millwright, Machinist or Engineer,** wants position. Will go anywhere; age 35 and married. Willing to work for small pay at the start. First-class references

1116 **Cloth Examiner and Shipping** Clerk wants position in finishing room; age 31; good references; will go anywhere; long experience on dress goods, worsted, cassimeres, meltons, etc.

1155 **Wool Sorter.** Understands grading all sorts of wool 24 years of age, and single. Will go anywhere, excepting Western States. Can take position at once.

887 **Overseer of Spooling** in a knit or cotton mill. Is competent to take superintendency of a knitting mill. Is experienced principally on fine underwear. 33 years of age; married. Will not go South or to Canada.

1124 **Bleacher** wants position. Age 50; married. Has been employed in a first class bleachery for several years, and can furnish good references. Will go anywhere. Wages moderate.

1157 Wants position. Has a general knowledge of all departments in a cotton mill, and can fill most any position. Has highest of references; age 26, married.

1119 **Salesman,** wants position selling dyestuffs. Is a thoroughly posted man in this line; can refer to past employers. Will go anywhere. Age 41 and married.

B. F. STURTEVANT COMPANY,

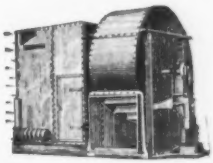
MANUFACTURERS OF THE

Sturtevant Blowers, Etc.,

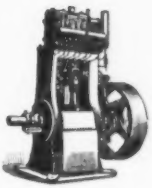
Boston, Mass., U. S. A.

The

STURTEVANT SYSTEM



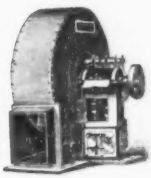
for HEATING and VENTILATING TEXTILE MILLS.



for DRYING and HANDLING RAW STOCK.

for DRYING, TENTERING and OXIDIZING PLANTS.

for Removing STEAM from DYE HOUSES, SLASHERS, DRY CANS, etc., etc.



for Removing waste from FRENCH NAPPERS and collecting same.

for FORCED or INDUCED DRAFT on BOILER PLANTS.

SPECIAL BLOWERS AND ENGINES FOR EVERY DUTY.

Plans, Estimates and Catalogues Cheerfully Furnished.

B. F. Sturtevant Company,

34 Oliver Street, Boston, Mass.
131 Liberty Street, New York, N. Y.
135 North Third Street, Philadelphia, Pa.
16 South Canal Street, Chicago, Ill.

75 Queen Victoria Street, London, E. C. Eng.
21 West Nile Street, Glasgow, Scotland.
87 Zimmerstrasse, Berlin, Germany.
2 Kungsholmstorg, Stockholm, Sweden.

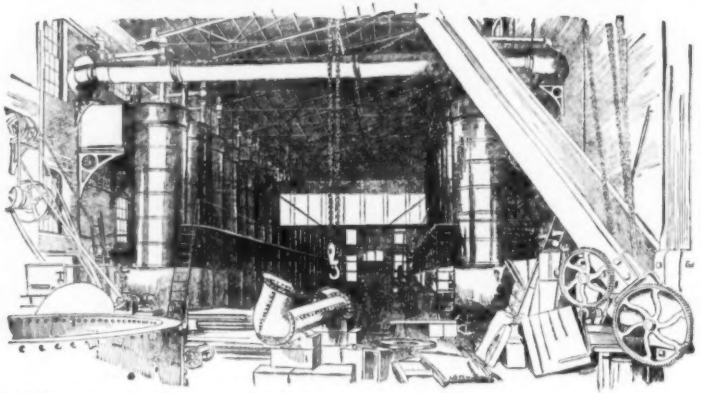
GEISENHEIMER & CO.
189 Front St., New York.
Branch Offices: 163 Milk Street, Boston. 31 South Front St., Philadelphia.
K. OEHLER'S

ANILINE COLORS, ANILINE SALT,
BLOOD ALBUMEN,
DYE-STUFFS, DYE WOOD EXTRACTS.

CHAS. M. JARVIS, Pres. & Chief Engineer. BURR K. FIELD, Vice-President. GEO. H. SAGE, Secretary. F. L. WILCOX, Treasurer.

THE BERLIN IRON BRIDGE CO.,

ENGINEERS, ARCHITECTS, AND BUILDERS OF IRON AND STEEL STRUCTURES.



The above illustration is taken direct from a photograph and shows the interior of a Boiler House, the roof of which was designed and built by us for the Amoskeag Mfg. Co., at Manchester, N. H. The building is 75 ft. in width and 275 ft. in length, the walls being made of brick, and the Roof being made of Iron—iron trusses, iron purlins, and covered with Corrugated Iron, so that there is absolutely no woodwork anywhere about the building which can take fire. For Boiler Rooms this construction particularly commends itself.

OFFICE AND WORKS:

☞ Send for Illustrated Catalogue.

EAST BERLIN, CONN.

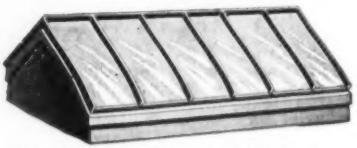
FRANKLIN H. KALBFLEISCH CO.
Manufacturing Chemists.
80 & 82 William St., New York.
Send for particulars of The Simplex Acid Pump. You cannot afford to be without one, for drums, carboys, or barrels.

Aqua Ammonia, Acetic, Muriatic, Nitric and Sulphuric (brimstone) Acids. Iron, Tin, and Copper Salts and Solutions, Glauber's Salt, Epsom Salts, Sulphate of Soda, Phosphate of Soda, and a general line of Chemicals.
WRITE FOR QUOTATIONS.

JOHN W. FERGUSON,
Builder and General Contractor.
Office, Paterson Nat. Bank, Paterson, N. J.
Mill Building a Specialty.
References made to some of the largest mills owners in the Middle States, including Clark Thread Co., Newark, N. J., Barbour Flax Spinning Co., Paterson, N. J., and others.

HOLLISTER BROS.,
Fine Wool Yarns and Wastes.
Selling Agents for
Victor Delobel, Tourcoing, France.
Office, 160 5th Ave., New York.

Metal Skylights



Absolutely no leakage from any source: no dripping or sweating; fire-proof; ventilating.
E. VAN NOORDEN & CO.,
383 Harrison Ave., Boston, Mass.

A. Klipstein & Co.
Dyestuffs & Chemicals
Fast Alizarine Colors
For Wool a Specialty.
122 Pearl Street, NEW YORK.
283-85 Congress Street, BOSTON.
120 Arch Street, PHILADELPHIA.
124 Michigan Street, CHICAGO.

Est. 1855. **WARREN CHEMICAL & MFG. CO.** Inc. 1858.
45 Fulton Street, New York, U. S. A.
ROOFING.
Warren's Anchor Brand Natural Asphalt Roofing;
Tile and Gravel Roofing;
Asphalt Floors, Driveways, Etc.